Short Form Catalogue

Industrial Low Voltage Products

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Industrial Low Voltage Products

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Control^{IT} Automation Devices

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Control^{IT} Automation Devices

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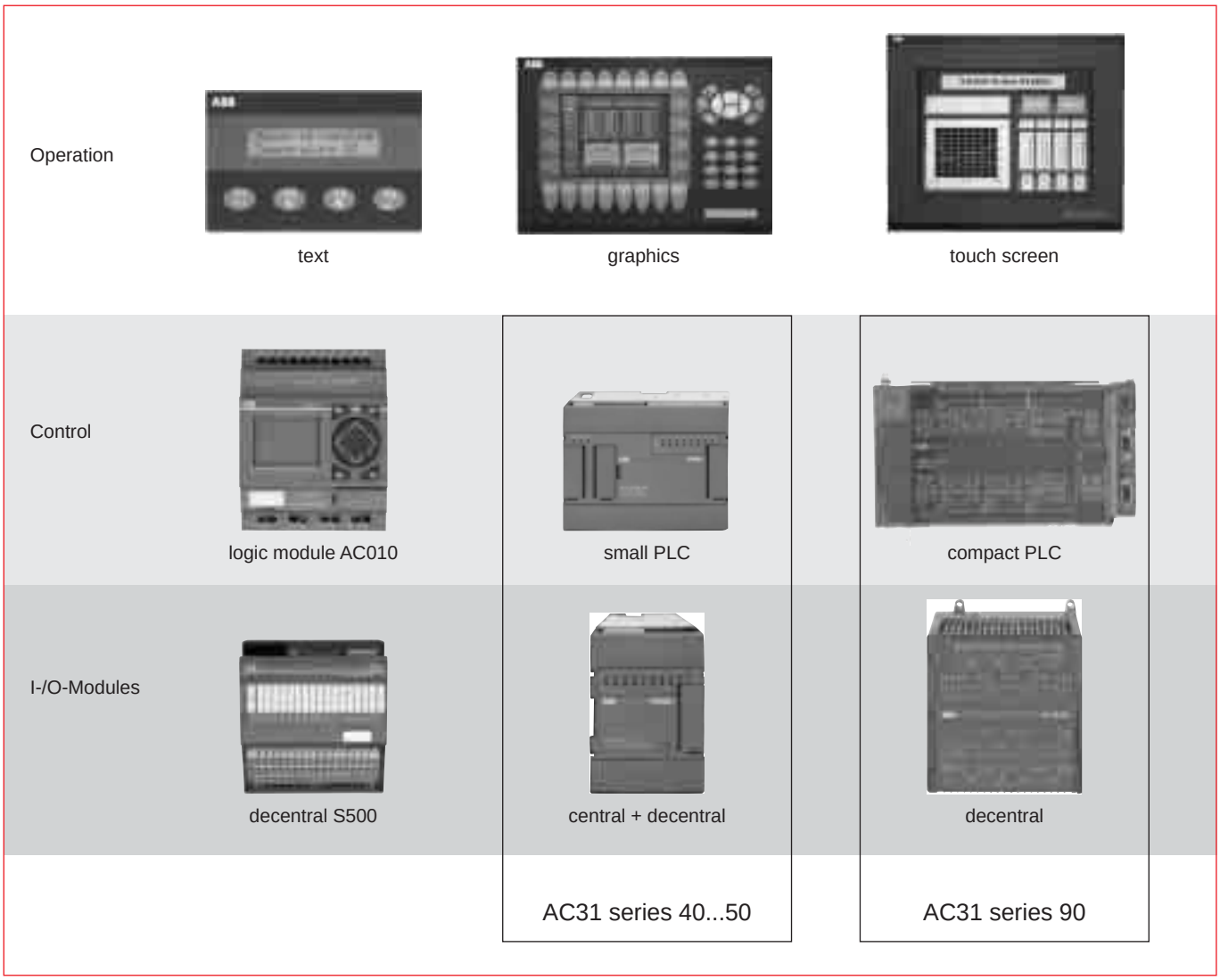
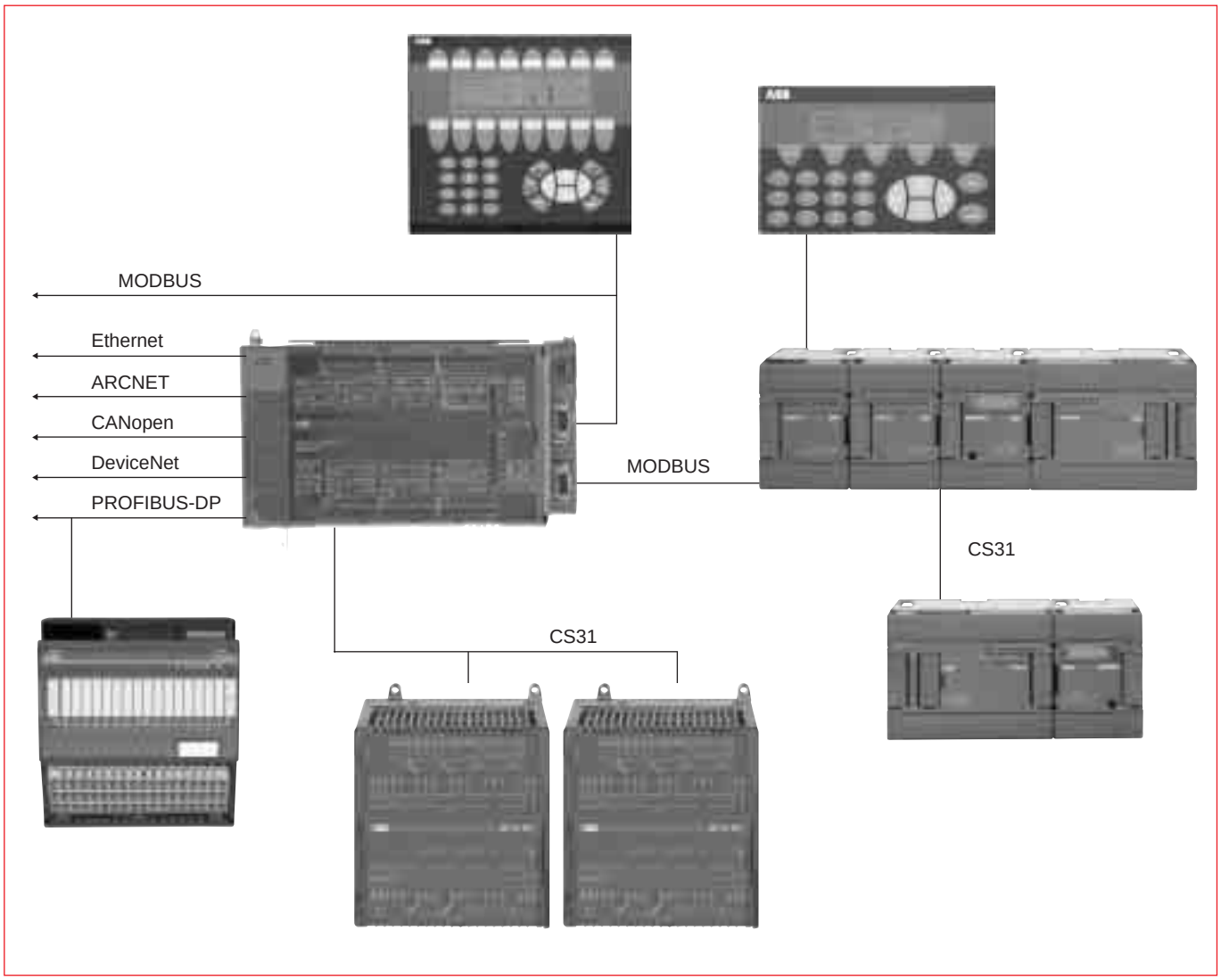
ControlIT Automations Devices
Overview



With these components you will be able to realize the right automation solution for every applications:

Operation Terminals:	text dsiplay, graphic display or touch screens.
Logic modules AC010:	for small, economic applications. Available in different performance modules for varying voltage ranges.
Small PLC AC31 series 40 ..50:	small but high-performance. Expandable centrally and decentrally.
Compact PLC AC31 series 90:	for demanding applications. Easily expandable decentrally. With up to 5 integrated interfaces for open communication. With 60 I/O.
Programming package 907 AC 1131:	acc. to IEC61131-3 (incl. extensive libraries + configurators).
For higher safety:	safety-related PLC AC31-S.
I-/O-modules S500:	for PROFIBUS DP.

Control^{IT} Automations Devices
Overview



Control IT PLC family AC31

AC31 offers compact, high performance central units in varying designs with the possibility of decentral networking.

All central units are universally programmable according to IEC 61131-3, beginning with the small PLC (series 40..50) up to the high-performance compact PLC (series 90).

They offer high functionality within a small space with up to 1 MByte user memory, with 60 integrated I/Os (analogue and digital), with two serial interfaces (both of which are configurable for MODBUS or ASCII) and with a plug-in smart media card for the uploading of user programms or for data saving.

Up to two further communication interfaces with their own processors are already integrated within the central unit.

The user can choose varying combinations of integrated fieldbusses resp. network protocols: e.g. Ethernet + PROFIBUS DP, ARCNET + CANopen or also CANopen + Ethernet.

The couplers are integrated within the standard housing of the central unit in order to save space. Tools for the configuration of the fieldbusses used are already an integral part of the software package 907 AC 1131.

The components of AC31 series 40..50 and of AC31 series 90 can be mixed according to will. This way it is even possible to combine I/O-modules of series 40..50 with the compact controllers of series 90 or vice versa to combine I/O-modules of series 90 with a smallPLC of series 50.

All components are Industrial IT – certified. The respective Aspect-Object-files are available upon request.

ControlIT Automations Devices
Overview

The communication protocols – an overview

Communication processor/module	Description
MODBUS	Due to its high dissemination, this protocol offers connectivity for controllers of different origin, to operating panels and PC operating stations. The MODBUS interface(s) is integrated in the CPU. A further MODBUS coupler with 2 additional interfaces can be attached. Max. number of particpants with RS 485: 32. Max distance with RS 485: 1.2 km. Possibility for connecting a user-to-user modems. Network design: Point-to-point and multipoint-line.
Ethernet	Supports sending and receiving data via TCP/IP and/or UDP/IP. Further application layers can be implemented by download. It is even possible to run TCP/IP, UDP/IP and application layers simultaneously. The protocols: IP, TCP, UDP, ARP, RP, BOOTP, DHCP are supported as standard. A communication with third-party-systems is possible using either MODBUS/TCP or customer specific applications layers. Transfer rate 10 / 100 Mbit/s.
CANopen	Standardised layer-7-protocol on the basis of Controller Area Network (CAN) and of the CAN application layer (CAL). The access method is based on the master-slave-principal. It allows for the combined operation of several busmasters as well as the synchronized data transmission to multiple subscribers and up to 2.048 different communication objects. Baud rate of up to 1 Mbit/s. Protocols: event-triggerd, cyclical, acyclical, on demand.
PROFIBUS DP	Allows for the master-and-slave communication in the field. Connection to automation systems of third-party manufacturers as well as intelligent preprocessors like drives, control panels and sensors. Max. lenght of the net (RS 485): 1200 m at 9.6 kBit/s. 32 stations per net max (master and slave). 126 with repeater. Transfer rate 9,6 kBit/s up to 12 MBit/s.
ARCNET	is the basis for an economical and fast integration of AC31 progammable controllers. Also suited for the process visualisation or for connection of other systems. Data transfer rate of 2.5 MBit/s. Collision free data transfer due to token bus with automated login and logoff of participants. Automated reconfiguration of the net when a station activates or deactivates. Up to 255 masters on the same net. Overall net lenght 300 m, up to 6 km with repeaters . All net forms e. g. net, star.
RCOM	is a communication protocol designed for the remote data transmisson. It is suited for transmissions using a user-to-user or dial-up connection. Standard modems establish the connection between stations.
DeviceNet	For fast data exchange on the field level. For coupling of decentral field devices like I/O, drives and valves.
CS31	Bus for the easy connection of CPUs and I/O devices . The CS31 system bus is a RS 485-2-wire bus, designed for a fast and interference resistant data transfer. Up to 31 I/O-devices. Max. lenght: 500 m resp. 2000 m with repeater. With repeaters you can also achieve bus redundancy. Transfer rate: 187.5 KBaud.
AC31 Safety-Fieldbus	For the certified transmission of safety signals between safety-related controllers and the safety-related I/O devices (AC31-S only). Mixing of safety-related signals and operation signals

ControlIT Automations Devices
Overview

	07KT51	07KT94-S	07KT95	07KT96	07KT97	07KT98	07SL97
MODBUS	x	x	x	x	x	x	x
Ethernet					x	x	
CANopen					x	x	
PROFIBUS DP					x	x	x
ARCNET		x			x	x	x
DFÜ RCOM		x	x	x	x	x	
DeviceNet							x
CS31 system bus	x	x	x	x	x	x	x
AC31 Safety Fieldbus		x					

Safety PLC AC31-S - Safety First

Nowadays, machine and plant manufacturers are confronted by ever more extensive and ever more stringent safety conditions, in line with the demand that the safety of machines and systems must be implemented optimally and in line with the “state of the art” for protection of man, machine and the environment. The safety-related automation system AC31-S allows small, distributed control units to be designed and standardised. They operate autonomously at a local level where the safety function is required. The relevant, related inputs and outputs are installed in the field where the signal is detected or output. They are connected to their central unit via the AC31 Safety Fieldbus. This helps, once again, to save on cables. These control units can be networked flexibly and can exchange data among each other or with a higher-level system.

Economical

The Advant Controller 31-S requires no redundant central unit for safety functions, so this system is lowcost both as regards hardware and as regards engineering. The I/O units at a local level already feature an internal 2-channel structure and monitor themselves, including passive error and fault detection.

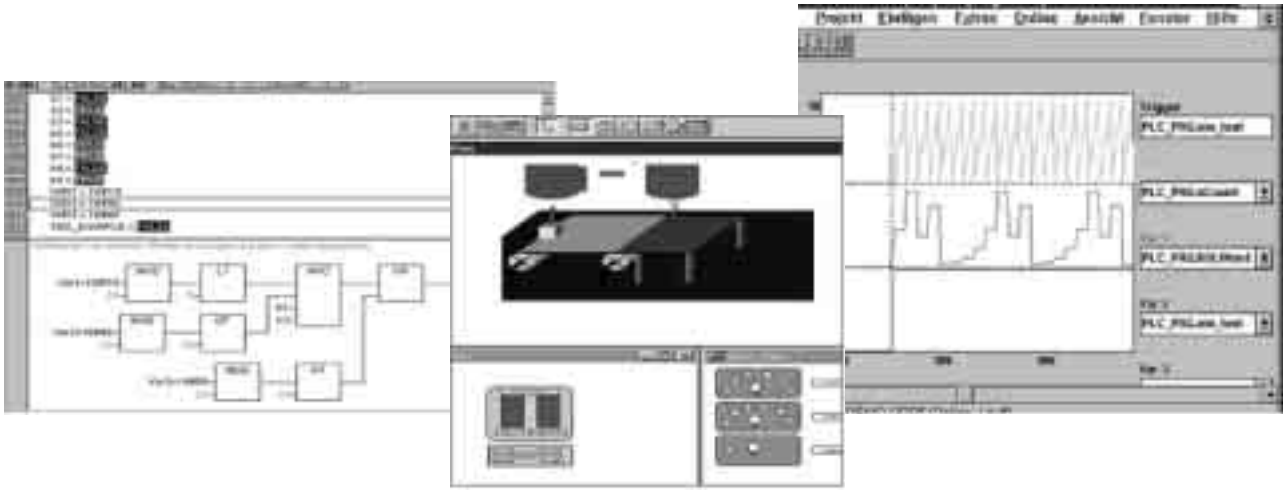
One set of hardware for all functions

The hardware of the Advant Controller 31-S supports the safety functions and operating functions simultaneously. At the AC31 safety filed bus safety-related I/O modules and standard I/Os can be mixed.

The safety-related functions are programmed with the help of certified function blocks.

The controller is certified for requirement class 4 and safety categorie 3.

ControlIT Automations Devices
Overview



Programming package 907AC1131

For the integrated programming of AC31 central units according to IEC61131-3.

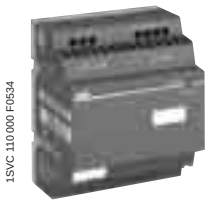
907AC 131 offers the following functionalities:

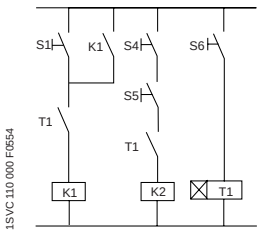
- **6 programming languages:** Function Block Diagram (FBS), Instruction List (IL), Ladder Diagram (LD), Structured Text (ST) and Sequential Function Chart (SFC) and Continous Function Chart (CFC).
- **Debugger:** for the step-by-step processing of the automation program, including setting of breakpoints.
- **Offline simulations:** IEC-61131-3 comands including fault behaviour can be simulated for an external controller. After testing, the application can be transfered to the controller.
- **Sampling Trace** (chronological portrayal of process variables) and a visualisation – with integration of pictures and illustrations and display of process-variables from the controller.
- **Recipe administration and watch lists:** values of selected variables can be displayed. Variables can be preallocated with dedicated values and be transfered to the controller all at once. (‚Writing the recipe'). Current values of the controller can be imported and saved in the same manner into the recipe and watch list manager as preallocations(‚Reading the recipe '). These functions are expecially helpful e.g. for the adjustment and gathering of control parameters.
- **Visualization** with color changes, moving elements, bitmaps, textdisplay, set value input and display of process variables from the controller. Dynamic columns, alarm and event processing, function keys. The graphics are created with the help of the software package 907 AC1311 and can be also used with the operator version that is available seperately on the CD.
- **Configuration** for PROFIBUS-DP, DeviceNet, Ethernet, CANopen.
- **Open interfaces** DDE and OPC.
- **Programming** using ARCNET and Ethernet.
- **Engineering interface** for accessing an external project data base from the programming system, where data is administered that accumulates while building an automation project. The use of an external data base ensures the consistency of the data, which then can be used mutually by several users, projects and programs.
- Extensive libraries.
- Windows 32 bit standard.
- Operating systems Windows 98, NT, 2000 and XP.
- **Visualisation package:** program for the operation of a machine or installation. Graphics created with the programming software are displayed online.

Logic module AC010

Concept

Logical control instructions instead of wiring





Concept

The slogic modules AC010 are ideally suited for small to mid-sized control duties and are a simple and fast replacement for logical wirings.

Many applications can be found in control areas as well as for time functions, e.g.:

- In buildings, lighting installations, air conditionings. for general control functions.
- In small machines and installations.
- As stand-alone control module for small applications.

Steps for the implementation of AC010

- AC010 is suited for simple, fast and convenient implementation without having to spend too much time on planning and programming.
- In no time the user can learn about the advantages and benifits of logic modules like AC010.
- AC010 takes over the control functions according to the programmed basic wiring diagram.
- Setup, saving, simulation and documentation is done with the compacten, easy-touse software package AC010-PS001.

Software attributes

- Display on a PC monitor according to DIN, ANSI.
- Choose between various languages.
- Easy installation on all Windows operating systems.

Technical data

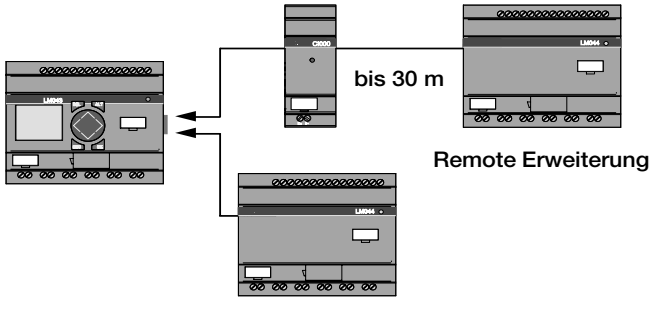
central und decentral extension modules.
Max. extensions: 24 inputs/ 16 outputs.

- Digital inputs
- 2 analogue inputs
- Relay outputs, 8 A max.
- Transistor outputs, 0.5 A
- With or without display

Software attributes

- Logical combinations
- Time functions
- Counter
- Time control with week function
- Real-time clock
- Comparison functions

Extension



AC010 12/6-8 I/O logic modules are easily extendable.
These I/O-extensions are possible locally as well as decentrally.

Approvals	LMxxx	DO	DX
UL	●	●	●
CSA	●	●	●
PCT	●	●	●

PLC's

Logic module AC010
Applications and Benefits
Product overview

Applications

Industrial

- Machine building
- Compressor control
- Gas- / airdryer
- Packaging machines
- Transport systems
- etc.

Building technology

- Control of lights and doors
- Fans
- Air conditioning systems

Power engineering

- Generators
- Solar- and wind technology
- Water supply
- Sewage technology
- etc.

Oil, gas and water

- Pump control
- Tank- and level control
- etc.

Cost saving benefits

- Control programms, logical functions, time modules, relay in one device
- Saves time and costs in the planning and adaption of the project
- Fast and economical solution for logic controll and wiring
- Fast and easy handling
- Very little investment of time necessary for getting to know AC010 applications
- Extendable up to 40 I/Os
- Display for text informationen, parameters, wiring and status
- Memory card for saving the program or for saving times and functions
- Password protection
- Compact and convenient software for programming and documentation

Note:
For Ordering details see section Electronic Products and Relayes

Product overview

Type	Supply 115/230 V AC	Supply 24 V DC	Supply 12 V DC	Inputs	Outputs: R = Relay, T = Transistor	Continuous current Outputs	LC Display, key pad	Text display	Week function time control	Extendable with modules in following columns	DO001-EX02R (only lokally)	DX001-EX18RAC	DX011-EX18RDC	DX021-EX20TDC
LM021-12RDC		x		8	4R	8 A	x		–	–				
LM022-C12RDC		x		8	4R	8 A	x		x	–				
LM023-C12RDC12V			x	8	4R	8 A	x		x	–				
LM024-CX12RDC		x		8	4R	8 A	–		x	–				
LM025-C12TDC		x		8	4T	0.5 A	x		x	–				
LM026-CX12TDC		x		8	4T	0.5 A	–		x	–				
LM041-CE18RDC		x		12	6R	8 A	x	x	x	x	x	x	x	x
LM042-CXE18RDC		x		12	6R	8 A	–		x	x	x	x	x	x
LM043-CE20TDC		x		12	8T	0.5 A	x	x	x	x	x	x	x	x
LM044-CXE20TDC		x		12	8T	0.5 A	–		x	x	x	x	x	x
LM001-12RAC	x			8	4R	8 A	x		–	–				
LM002-C12RAC	x			8	4R	8 A	x		x	–				
LM003-CX12RAC	x			8	4R	8 A	–		x	–				
LM011-CE18RAC	x			12	6R	8 A	x	x	x	x	x	x	x	x
LM012-CXE18RAC	x			12	6R	8 A	–	–	x	x	x	x	x	x

System data AC31 series 40..50

Operation and environmental conditions

Environmental conditions	
• Temperature:	
Operation: horizontal	0 °C to + 55 °C
vertical	0 °C to + 40 °C
Storage	– 40 °C to + 75 °C
Transport	– 25 °C to + 75 °C
• Humidity:	DIN 40040 class F without bedewing
Anual average	≤ 75%
up to 30 day of the year	95%
occasional	85%
• Air pressure:	DIN 40050
Operation	≥ 800 hPa (≤ 2000 m)
Storage	≥ 600 hPa (≤ 3500 m)
Mechanical data	
• Protection class	IP 20
• Housing	UL V2
• Vibration resistance	CEI68-2-8 Test Fc
• Shock resistance	CEI68-2-27 Test Ea
Tolerances for line voltage	
• 24 V DC	9.2 to 30 V (– 20%, + 25%)
• 120 V AC (50 / 60 Hz)	97.75 to 126.5 V (– 18.5%, + 5.5%)
• 230 V AC (50 / 60 Hz)	195.5 to 253 V (– 15%, + 10%)

System data AC31 series 90

Operation and environmental conditions

• Voltages		
24 V DC	operation and supply voltage	24 V DC (+ 20%, – 15% without ripple)
	absolut limits	19.2 V ... 30 V, incl. ripple
	ripple	≤ 5%
120 V AC	supply voltage	120 V AC (+ 10%, – 15%)
	frequency	50 Hz (+ 5%, – 5%) oder 60 Hz (+ 5%, – 5%)
230 V AC	supply voltage	230 V AC (+ 10%, – 15%)
	frequency	50 Hz (+ 5%, – 5%) oder 60 Hz (+ 5%, – 5%)
• Voltage interruption bridging time		
	DC-supply	interruption ≤ 10 ms, time between two interruptions≥ 1 s
	AC-supply	interruption ≤ 0.5 periods, time between two interruptions ≥ 1 s
• Temperature	operation	0 °C ... + 55 °C
	storage	– 25 °C ... + 75 °C
	transport	– 25 °C ... + 75 °C
• Humidity		50 ... 95%, without bedewing
• Air pressure	operation	≥ 800 hPa / ≤ 2000 m
	storage	≥ 660 hPa / ≤ 3500 m

Creeping and sparking distances

Creeping and sparking distances comply with	surge category II, pollution degree 2

Check voltages

230 V circuits (net, 230 V I/Os) against other circuits	2500 V
120 V circuits (net) against other circuits	1500 V
24 V circuits (feed, 24 V I/Os), if they are potentially separated against other circuits	500 V
CS31-Bus against other circuits	500 V

Electromagnetic compability

• Interference resistance against electrostatic discharge (ESD)	acc. to DIN 61000-4-2
– interference voltage air discharges	8 kV
– interference voltage contact discharges	4 kV
• Capacitance immunity (CW radiated)	acc. to DIN 61000-4-5
– field intensity at check	10 V / m
• interference resistance against transient noise voltages (burst)	acc. to DIN 61000-4-6
– voltage supply (AC / DC)	2 kV
– digital I/Os (24 V DC)	1 kV
– digital I/Os (120 / 230 V AC)	2 kV
– analogue I/Os	1 kV
– CS31 system bus	2 kV
– serial interfaces (COM)	0.5 kV
– ARCnet	0.5 kV
• Interference resistance against radio-frequency noise power (CW conducted)	acc. to DIN 61000-4-6
– test voltage	10 V
• Emitted interference	acc. to EN 55011 Funkstörgrad A and to EN 55022 Funkstörgrad A (communication modules only)

System data AC31 series 90 (cont.)

Mechanical data	
Connection types / Terminals	
for terminal block ECZ	screw terminal for slot- and crosstip screwdriver, conductor connection: max. 2 x 2.5 mm²
for plug-in row clamps (large)	screw terminal for slot- and crosstip screwdriver, conductor connection: max. 2.5 mm²
for plug-in row clamps (small)	screw terminal for slot- and crosstip screwdriver, conductor connection: max. 1.5 mm²
• Protection class	IP 20
• Housing	acc. to UL 94
• Vibration resistance	for all three axis
	10 Hz ... 57 Hz — continuous: 0,0375 mm; peak: 0,075 mm
	57 Hz ... 150 Hz — continuous: 0,5 g; peak: 1,0 g
• Shock resitance	for all three axis 15 g, 11 ms, half wave
Mounting	
DIN-rail acc. to DIN EN 50022, only for terminal block ECZ:	35 mm, height 15 mm height 7.5 mm and 15 mm
Screw mounting	screws, diameter 4 mm
Interfaces	
Between central unit and I/O modules	EIA RS-485 (CS31 system bus)
for the programming units and the connection with a terminal, 9-pol. D-SUB jack	EIA RS-232

ControlIT Automation Devices
Overview Central Units

Details / Type:	Small PLC AC31 series 40..50						Slot-PLC AC31 series 90
	CR41	CT41	CR42	CT42	KR51	KT51	SL97
Program memory							
Flash EPROM and RAM [KByte]	32				32		480
Supply voltage							
24 V DC	x	x	x	x	x	x	
120 / 230 V AC	x	–	x	–	x	–	
Pug-in Smart Media Card	–				–		x
Cycle time for 1 KByte [ms]							
100% binary values	0.4				0.4		–
65% binary values and 35% word	1.2				1.2		0.22
Number of inputs and outputs							
Integrated (DI / DO / DC)	8 / 6 / –		8 / 6 / –		8 / 6 / –		– / – / –
DI/DO maximum	110		110		1000		992
integrated (AI / AO)	– / –		3 / –		– / –		– / –
AI/AO maximum	36		36		222		224 / 224
Digital inputs 24 V DC	x				x		–
Digital outputs:							
Transistor (T) 24 V DC, 0,5 A	–	x	–	x	–	x	–
Relays (R) 120 / 230 V AC, 2 A	x	–	x	–	x	–	–
Analogue input range							
± 10 V	–		x		–		–
0 ... 10 V, 0 ... 5 V, ± 5 V	–		–		–		–
0 ... 20 mA, 4 ... 20 mA	–		–		–		–
PT100 (– 50 °C ... + 400 °C)	–		–		–		–
PT100 (– 30 °C ... + 70 °C)	–		–		–		–
PT100 (– 100 °C ... + 524 °C)	–		x		–		–
configurable as DI	–		–		–		–
Analogue output range							
± 10 V	–				–		–
0 ... 20 mA, 4 ... 20 mA	–				–		–
Data bufferung via battery	integrated				integrated		optional
Real-time clock	x				x		x
Programming package							
907 AC 1131	x				x		x
907 PC 331	x				x		–
AC31GRAF	x				x		–
Programm execution							
cyclical or time driven	x				x		x
multitasking	x				x		x
user program protection							
password	x				x		x
Serial interfaces							
RS232 (programming, MODBUS, ASCII)	1				1 (RS232 or RS485)		1
RS485 (CS31 as MODBUS)	–				1		–
Integrated potentiometer	2				2		–
Data memory [KByte]	2				2		256, incl. 16 KB RETAIN
Timers	unlimited (42 at the same time)				unlimited (42 at the same time)		unlimited
Counters	unlimited (function)				unlimited (function)		unlimited
High-speed counters (number/frequency)	2 / 7 kHz				2 / 7 kHz		–
Interfaces / Protocols							
CS31	–				x		x
ASCII	x				x		x
MODBUS®	x				x		x
Ethernet	–				–		–
ARCNET	–				–		x
PROFIBUS-DP	–				–		x
CANopen	–				–		–
DeviceNet	–				–		x
AC31Safety-Fieldbus	–				–		–
RCOM (additional coupler)	–				–		–
Note:	centrally expansible with 6 I/O modules of series 40 ... 50, max. Up to 110 digital or up to 36 analogue or mixed.						

	Compact PLC AC31 series 90				Safety PLC AC31 series 90
	KT95	KT96	KT97	KT98	KT94-S
	480	480	480	1000	240
	x –	x –	x –	x –	x –
	x	x	x	x	x
	– 0.22	– 0.22	– 0.22	– 0.07	– 0.22
	12 / 8 /0 1012 4 / 2 228 / 226	24 / 16 / 0 1032 – 224 / 224	24 / 16 / 8 1040 8 / 4 232 / 228	24 / 16 / 8 1040 8 / 4 232 / 228	24 / 16 / 8 992 8 / 4 224 / 224
	x	x	x	x	x
	x –	x –	x –	x –	x –
	x x – – – – –	– – – – – – –	x x x x x – x	x x x x x – x	x x x x x – x
	x –	– –	x x	x x	x x
	optional	optional	optional	optional	optional
	x	x	x	x	x
	x – –	x – –	x – –	x – –	– x –
	x x	x x	x x	x x	– –
	x	x	x	x t	x
	2 –	2 –	2 –	2 –	2 –
	–	–	–	–	–
	256, incl. 16 KB RETAIN	256, incl. 16 KB RETAIN	256, incl. 16 KB RETAIN	1256, incl. 256 KB RETAIN	256, incl. 16 KB RETAIN
	unlimited	unlimited	unlimited	unlimited	unlimited (80 at the same time)
	unlimited	unlimited (function)	unlimited (function)	unlimited	unlimited
	2 / 50 kHz	2 / 50 kHz	2 / 50 kHz	2 / 50 kHz	2 / 50 kHz
	x x x – – – – – – x	x x x – – – – – – x	x x x x x x x – x	x x x x x x x x – x	x x x – – – – – x x
Note:					Connection of safety-related-I/O and standard-I/O

ControlIT Automation Devices

I/O modules AC31 series 40..50, series 90 and S500

Overview

Digital I/O modules	Bus modules series 50[*1)]			Series 40 .. 50 Only in connection with bus modules or CPU							
	ICMK 14 F1	ICMK 14 F1	ICMK 14 N1	XI 16 E1	XO 16 N1	XO 08 Y1	XO 08 R1 [*2)]	XO 08 R2	XC 08 L1	XK 08 F1	XC 32 L1 [*3)]
Supply voltage											
24 V DC	x	–	x	x	x	x	x	x	x	x	x
230 V AC	–	x	–	x	x	x	x	x	x	x	x
Number of digital I/Os (DI / DO / DC)	8 / 6 / -	8 / 6 / -	8 / 6 / -	16 / - / -	- / 16 / -	- / 8 / -	- / 8 / -	- / 8 / -	- / - / 8	4 / 4 / -	- / - / 32
Digital inputs 24 V DC				–	–	–	–	–	x	x	x
Digital outputs :											
relay (R) 120 / 230 V AC, 2 A	x	x	–	–	–	–	x	x	–	x	–
transistor (T) 24 V DC, 2 A	–	–	–	–	–	–	–	–	–	–	–
transistor (T) 24 V DC, 0.5	–	–	x	–	–	–	–	–	x	–	x
Short circuit- / overload-proof	x	x	x	x	x	x	x	x	x	x	x
Interfaces / protocols											
CS31 field bus	x	x	x	–	–	–	–	–	–	–	–
PROFIBUS-DP	–	–	–	–	–	–	–	–	–	–	–
Connection type (1=1-cond., 3=3-cond.)											
spring-type terminal	1	1	1	1	1	1	1	1	1	1	with
screw terminal	1	1	1	1	1	1	1	1	1	1	HE10
M12	–	–	–	–	–	–	–	–	–	–	connector
Protection class IP67	–	–	–	–	–	–	–	–	–	–	–
Note:	[*1)] centrally expansible with up to 6 I/O modules of series 40...50. (Max. 8 AI and 4 AO) [*2)] 4 normally open outputs + 4 normally open and normally closed outputs [*3)] 4 counters 20 kHz / 4 frequnecy meters can be connected to the pre-wiring system INTERFAST										

Analogue I/O modules	Series 40 .. 50 only with bus module or CPU				Series 90		S500 only with bus module		
	XM 06 B5	XE 08 B5	XTC 08[*4)]	XC 32 L2[*5)]	07 AI 91	07 AC 91[*6)]	AI511	AI512	AX511
Supply voltage									
24 V DC	x	x	x	x	x	x	x	x	x
230 V AC	x	x	x	x	–	–	–	–	–
Number of analogue I/Os AI / AO / AC	4 / 2 / –	8 / – / –	8 intern.	8 / – / –	8 / – / –	– / – / 16	4 / – / –	8 / – / –	4 / 4 / –
Analogue input signals									
0 ... 10 V	–	–	–	x	–	–	x	x	x
± 10 V	x	x	–	–	x	x	x	x	x
± 20 mA	x	x	–	–	–	–	x	x	x
0 ... 20 mA	–	–	–	–	x	x	x	x	x
4 ... 20 mA	x	x	–	–	–	x	x	x	x
± 50 mV, ± 500 mV, ± 5 V	–	–	–	–	x	–	–	–	–
PT100, PT1000	x	x	–	–	x	–	–	–	–
thermo-couple	–	–	–	–	x	–	–	–	–
Analogue output signals									
± 10 V	x	–	–	–	–	x	–	–	x
0 ... 20 mA, 4 ... 20 mA	x	–	–	–	–	x	–	–	x
± 20 mA	–	–	–	–	–	–	–	–	x
Short-circuit- / overload-proof	x	x	x	x	x	x	x	x	x
Interfaces/ Protocols									
CS31-Feldbus	–	–	–	–	x	x	–	–	–
PROFIBUS DP	–	–	–	–	–	–	x	x	x
Connection type (1=1-cond., 3=3-cond.)									
spring-type terminal	1	1	1	with HE10	1	1	3	3	3
screw terminal	1	1	1	connection	1	1	3	3	3
Display chanel number / value	x	x	x	–	–	–	–	–	–
Note:	[*4)] Display for 8 internal channels [*5)] plus 24 configurable digitals (DC). Same as XC 32 L1 but 8 out of 32 DC can be used for AI. [*6)] incl. 1 x DI for shut-off of all AO of module. with 2 modes of operation: (1) 8 AI and 8 AO with 12 Bit resolution or (2) in pairs as AI or AO with 8 Bit.								

Series 90							Bus modules S500*6)		S500 only in connection with bus module		
07 DI 92	07DI93-I	07DO93-I	07DK93-I	07 DC 91	07 DC 92 TC91 *5)	07 TC90 /	DX501-DP	DX502-DP	DX511	DI511	DO511
x –	x –	x –	x –	x –	x –	x –	x –	x –	x –	x –	x –
– / – / 32	16 / – / –	– / 8 / –	8 / 4 / –	16 / 8 / 8	– / – / 32	32 / 32 / –	8 / 8 / –	8 / 8 / –	8 / 8 / –	16 / – / –	– / 16 / –
x	x	–	x	x	x	–	x	x	x	x	–
– – x	– – –	– x –	– x –	– – x	– – x	– – –	– – x	– – x	– – x	– – –	– – x
x	x	x	x	x	x	–	x	x	x	x	–
x –	x –	x –	x –	x –	x –	x –	– x	– x	– –	– –	– –
– 1 –	– – x	– – x	– – x	– 1 –	– 1 –	– – –	3 3 –	3 3 –	3 3 –	3 3 –	3 3 –
–	x	x	x	–	–	–	–	–	–	–	–

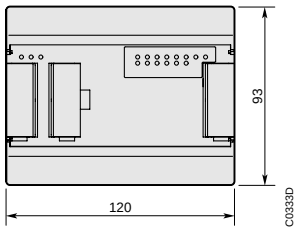
*5) Special key pad for the connection of operating panels with up to 32 buttons / switches and 32 LEDs at the CS31 field bus.

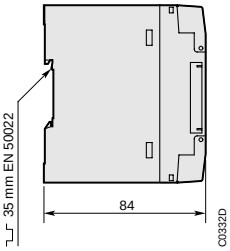
*6) Centrally expansible with up to 7 I/O modules of series S500, up to four of which can be analogue. Additional extension box available (digital or analogue channels in 1-conductor technology)

Safety-related I/O modules	07 DI 90-S	07 DO 90-S	07 AI 90-S
Supply voltage 24 V DC	x	x	x
Number of safety-related digital I/Os (DI / DO)	8 / – / –	– / 8 / –	– / – / –
Number of safety-related analogue I/Os (AI / AO)	– / –	– / –	4 / –
Digital inputs 24 V DC	x	–	–
Digital outputs: transistor (T) 24 V DC, 0.5 A	–	x	–
Analogue outputs: 4 ... 20 mA	–	–	x
Short circuit- / overload-proof	x	x	x
Interfaces / protocols AC31 Safety field bus	x	x	x
Connection type (1=1-cond., 3=3-cond.) screw terminal	1	1	1
Protection class IP67	–	–	–
Fault detection: short circuit overload breakd in cicuits forbidden signal level area over-, under run passive error internal error	 x – x x – x x	 x x – – – x x	 x – x x x x x
Internal 2-channel structures	x	x	x
Requirement class 4 (DIN19250)	x	x	x
Category 3 (EN954-1)	x	x	X
Note:	only in connection with saftey-related CPU KT94-S		

ControlIT Automation Devices
Central units, Communication couplers
Dimension Drawings

Central Units series 40..50 and bus module

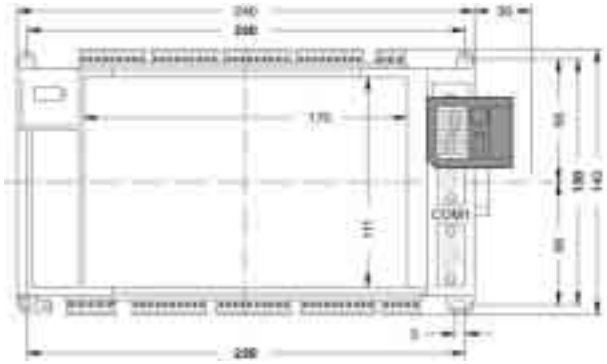


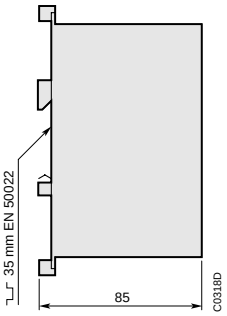


W x H x D [mm]	120 x 93 x 84
W x H x D [inches]	4.72 x 3.66 x 3.31
Mounting	35 mm – DIN rail acc. to DIN EN 50022 or screw mounting

07CR41/42, 07CT41/42, 07KR51, 07KT51 and ICMK 14 F1N1

Central Units series 90

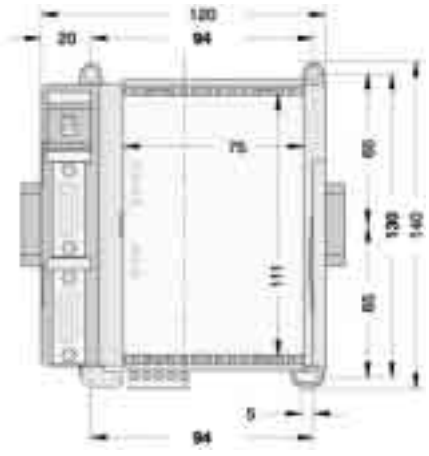




W x H x D [mm]	240 x 140 x 85
W x H x D [inches]	9,45 x 5,51 x 3,35
Mounting	35 mm – DIN rail acc. to DIN EN 50022 or screw mounting

07KT94, 07KT94-S, 07KT96, 07KT97 and 07KT98

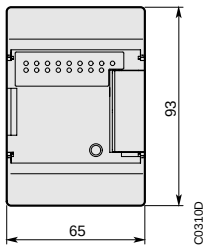
Communication modules series 90



W x H x D [mm]	120 x 140 x 85
W x H x D [inches]	4,72 x 5,51 x 3,35
Mounting	35 mm – DIN rail acc. to DIN EN 50022 or screw mounting

07KP90, 07KP93

I/O modules and communication modules series 40..50



W x H x D [mm]	65 x 93 x 84,5
W x H x D [inches]	2,56 x 3,66 x 3,33
Mounting	35 mm – DIN rail acc. to DIN EN 50022 or screw mounting

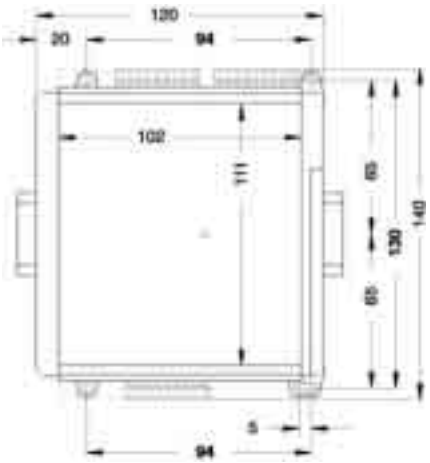
XI16E1, XO16N1, XO08R1, XO08Y1, XC08L1, XK08F1, XM06B5, XE06B5, 07KP53

Approvals

Germanischer Lloyd

Lloyds Register of Shipping

I/O modules series 90



W x H x D [mm]	120 x 140 x 85
W x H x D [inches]	4,72 x 5,51 x 3,35
Mounting	35 mm – DIN rail acc. to DIN EN 50022 or screw mounting

07DI92, 07DC91/92, 07AI91, 07AC91, 07DO90-2, 07DI90-S, AI90-S

Approvals

Germanischer Lloyd

UL CSA

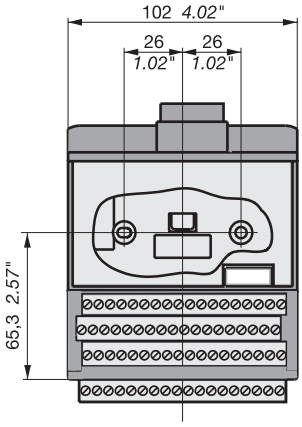
Lloyds Register of Shipping

Det Norske Veritas

TÜV, BG for AC 31-s

Büro Veritas

I/O module S500 for PROFIBUS-DP



W x H x D [mm]	102 x 65,3 x 79
W x H x D [inches]	4,02 x 2,57 x 3,11
Mounting	35 mm – DIN rail acc. to DIN EN 50022 or screw mounting

c UL us LISTED

PROFIBUS

07 CR 41

07 KR 51

ICMK 14 F1

Central Units AC31 series 40

Description: see “Overview Central Units”. Centrally expandable with up to 6 I/O modules. CRxx: relay outputs, CTxx: transistor outputs. Program memory without / with online changes: 34 [kB] / 16 [kB].

Type	I/O (DI / DO / AI) integrated	Counter inputs/ impulse outputs integrated	Supply voltage	Connection type	Order Number	Weight 1 piece kg
07 CR 41	8 / 6 / –	2 / –	24 V DC	screw terminal	**1SBP 26 0020 R1001**	0.400
				spring-type terminal	**1SBP 26 0520 R1001**	0.400
			120/230 AC	screw terminal	**1SBP 26 0021 R1001**	0.800
				spring-type terminal	**1SBP 26 0521 R1001**	0.800
07 CT 41	8 / 6 / –	2 / 1	24 V DC	screw terminal	**1SBP 26 0022 R1001**	0.400
				spring-type terminal	**1SBP 26 0522 R1001**	0.400
07 CR 42	8 / 6 / 3	2 / –	24 V DC	screw terminal	**1SBP 26 0023 R1001**	0.400
			120/230 AC	screw terminal	**1SBP 26 0024 R1001**	0.800
07 CT 42	8 / 6 / 3	2 / 1	24 V DC	screw terminal	**1SBP 26 0025 R1001**	0.400

Central units AC31 series 50

Description: see “Overview Central Units”. Integrated CS31 field bus. Centrally expandable with up to 6 I/O modules, decentrally upt to 31 I/O modules. KRxx: relay outputs, KTxx: transistor outputs. Program memory without / with online changes: 34 [kB] / 16 [kB].

Type	I/O (DI / DO / AI) integrated	Counter inputs/ impulse outputs integrated	Supply voltage	Connection type	Order Number	Weight 1 piece kg
07 KR 51	8 / 6 / –	2 / –	24 V DC	screw terminal	**1SBP 26 0010 R1001**	0.400
				spring-type terminal	**1SBP 26 0510 R1001**	0.400
			120/230 AC	screw terminal	**1SBP 26 0011 R1001**	0.800
				spring-type terminal	**1SBP 26 0511 R1001**	0.800
07 KT 51	8 / 6 / –	2 / 1	24 V DC	screw terminal	**1SBP 26 0012 R1001**	0.400
				spring-type terminal	**1SBP 26 0512 R1001**	0.400

Bus modules series 40..50

Description: see “Overview I/O modules”. Integrated CS31 field bus.
Centrally expandable with up to 6 I/O modules. (Max. 8 AI / Max. 4 AO)

Type	Number DI / DO	Relay/ transistor-outputs	Supply voltage	Connection type	Order Number	Weight 1 piece kg
ICMK 14 F1	8 / 6	Relay	24 V DC	screw terminal	**1SBP 26 0050 R1001**	0.400
				spring-type terminal	**1SBP 26 0550 R1001**	0.400
ICMK 14 F1	8 / 6	Relay	120/230 AC	screw terminal	**1SBP 26 0051 R1001**	0.800
				spring-type terminal	**1SBP 26 0551 R1001**	0.800
ICMK14 N1	8 / 6	Transistor	24 V DC	screw terminal	**1SBP 26 0052 R1001**	0.400
				spring-type terminal	**1SBP 26 0552 R1001**	0.400

Bus modules series 40..50

Description: see “Overview I/O modules”. MODBUS RTU slave integrated. Automatic baudrate adaption.
Centrally expandable with up to 6 I/O modules, either digital or analogue.

Type	Number DI / DO	Relay/ transistor-outputs	Supply voltage	Connection type	Order Number	Weight 1 piece kg
ICMK 14 F1-M	8 / 6	Relay	24 V DC	screw terminal	**1SBP 26 0053 R1001**	0.400
ICMK 14 F1-M	8 / 6	Relay	120/230 AC	screw terminal	**1SBP 26 0054 R1001**	0.800
ICMK14 N1-M	8 / 6	Transistor	24 V DC	screw terminal	**1SBP 26 0055 R1001**	0.400

ControlIT Automation Devices
Small PLC – AC31 series 40..50
Ordering data

XI 16 E1

XM 06 B5

Digital I/O modules series 40..50
Description: see „Overview I/O modules“.

Type	Number of DI / DO / DC	Input signal	Output signal	Connection type	Order Number	Weight 1 piece kg
XI 16 E1	16 / – / –	24 V DC	–	screw terminal	**1SBP 26 0100 R1001**	0.220
				spring-type terminal	**1SBP 26 0600 R1001**	0.220
XO 16 N1	– / 16 / –	–	24 V DC, 0.5 A	screw terminal	**1SBP 26 0105 R1001**	0.220
				spring-type terminal	**1SBP 26 0605 R1001**	0.220
XO 08 Y1	– / 8 / –	–	24 V DC, 2 A	screw terminal	**1SBP 26 0108 R1001**	0.220
				spring-type terminal	**1SBP 26 0608 R1001**	0.220
XO 08 R1	– / 8 / –	–	250 V AC, 2 A	screw terminal	**1SBP 26 0101 R1001**	0.220
				spring-type terminal	**1SBP 26 0601 R1001**	0.220
XO 08 R2*)	– / 8 / –	–	250 V AC, 2 A	screw terminal	**1SBP 26 0109 R1001**	0.220
				spring-type terminal	**1SBP 26 0609 R1001**	0.220
XC 08 L1	– / – / 8	24 V DC	24 V DC, 0.5 A	screw terminal	**1SBP 26 0102 R1001**	0.220
				spring-type terminal	**1SBP 26 0602 R1001**	0.220
XK 08 F1	4 / 4 / –	24 V DC	250 V AC, 2 A	screw terminal	**1SBP 26 0104 R1001**	0.220
				spring-type terminal	**1SBP 26 0604 R1001**	0.220
XC 32 L1**)	– / – / 32	24 V DC	24 V DC, 0.5 A	HE10 connector	**1SBP 26 0110 R1001**	0.220

*) 4 normally open outputs + 4 normally open and normally closed outputs

**) 4 counters 20 kHZ/4 frequency meters can be connected to prewiring system INTERFAST. HE10 not included

Analogue I/O modules series 40..50
Description: see „Overview I/O modules“.

Type	Number of AI / AO	Input signal	Output signal	Con nection	Order Number	Weight 1 piece kg
XM 06 B5	4 / 2	± 10 V, ± 20 mA 4 ... 20 mA, PT100, PT1000	± 10 V, 0 ... 20 mA, 4 ... 20 mA	screw terminal	**1SBP 26 0103 R1001**	0.220
				spring-type terminal	**1SBP 26 0603 R1001**	0.220
XE 08 B5	8 / –	± 10 V, ± 20 mA 4 ... 20 mA, PT100, PT1000	–	screw terminal	**1SBP 26 0106 R1001**	0220
				spring-type terminal	**1SBP 26 0606 R1001**	0.220
XC 32 L2*)	8 / –	0-10 V	–	HE10 connector	**1SBP 26 0111 R1001**	0.220

*) plus 24 configurable digitlas (DC) Same as XC 32 L1, but 8 out of 32 DC can be used for AI
4 counters 20 kHZ/4 frequency meters can be connected to prewiring system INTERFAST. HE10 not included

Communication modules for Central Units of series 40..50
Networking interface for small-sized controller AC31 series 40..50. Connection with the central unit via ribbon cable. Voltage supply from central unit. Cable: see accessories.

Type	Protocol	Software	Interfaces	Order Number	Weight 1 piece kg
07 KP 53	MODBUS	included (in AC1131 and AC31GRAF	2 independent MODBUS, RTU, Master or Slave (RS232/RS485)	**1SBP 26 0162 R1001**	0.220

Display series 40..50
Supplied by central unit or bus module

Type	Description		Order Number	Weight 1 piece kg
XTC 08	Display for 8 internal channels (4 digits + signs + selected channel)		**1SBP 26 0107 R1001**	0.220

07 SK 50

07 ST 50

Accessories series 40..50

Type	Accessories for	Description	Order Number	Weight 1 piece kg
07 SK 50	Central units Series 40 ... 50 MODBUS Coupler KP53	Programming cable. PC-Sub D, 9-poles	**1SBN 26 0200 R1001**	0,220
07 SK 52		Programming cable. without connector on the PC side	**1SBN 26 0202 R1001**	0,220
07 SK 51		Communication cable MODBUS/ASCII, PC-Sub D9 plug	**1SBN 26 0201 R1001**	0,100
07 SK53		Communication cable MODBUS/ASCII, without connector on the PC side	**1SBN 26 0203 R1001**	0,220
07 SG 50	Central units Series 40 ... 50	Simulation device for CPUs 8 switches	**1SAY 11 0811 R0001**	0,220
LAF100/HE10-20/UNI/662/UL*	I/O modules XC32L1 / XC32L2	Cable with HE10 connector for exten. and naked wire on the other side lenght: 1 meter	**003900706**	
LAF150/HE10-20/UNI/662/UL*	I/O modules XC32L1 / XC32L2	Cable with HE10 connector for exten. and naked wire on the other side lenght: 1.5 meters	**003900825**	
LAF200/HE10-20/UNI/662/UL*	I/O modules XC32L1 / XC32L2	Cable with HE10 connector for exten. and naked wire on the other side lenght: 2 meters	**003900906**	
LAF300/HE10-20/UNI/662/UL*	I/O modules XC32L1 / XC32L2	Cable with HE10 connector for exten. and naked wire on the other side lenght: 3 meters	**003901104**	
LAF500/HE10-20/UNI/662/UL*	I/O modules XC32L1 / XC32L2	Cable with HE10 connector for exten. and naked wire on the other side lenght: 5 meters	**003901322**	
07 ST 50	CPUs and bus modules series 40..50, digital I/O modules	2-tier terminal for digital, 3-wire sensors / actuators, 2 pieces	**1SBN 26 0300 R1001**	0,220
07 ST 51	XM06B5, XE08B5	2-tier terminal for analogue, 3-wire sensors, 2 pieces	**1SBN 26 0301 R1001**	0,220
07 ST 52		2-tier spring-type terminal for digital, 3-wire sensors / actuators, 2 pieces	**1SBN 26 0302 R1001**	0,052
07 ST 54	CPUS and bus modules series 40..50	spring-type terminal set	**1SBN 26 0311 R1001**	0,052
07 ST 55	XI16E1, XO16N1, XE08B5	spring-type terminal set	**1SBN 26 0312 R1001**	0,052
07 ST 56	XO08R1, XC08L1, XK08F1	spring-type terminal set	**1SBN 26 0313 R1001**	0,052
07 ST 57	XM06B5	spring-type terminal set	**1SBN 26 0314 R1001**	0,052
	Series 40..50	labels for marking of the I/O channels	**1SBN 26 0310 R1001**	
Documentation	Series 40 ... 50	englisch	**1SBC 26 0400 R1001**	0.200
Documentation	Series 40 ... 50	french	**1SBC 26 0401 R1001**	0.200

* ref. to prewiring system INTERFAST documentation for additional information

INTERFAST harnesses are also available for Series 40 ... 50 central units + remote modules XI16E1, XO16N1, DC92

07 KT 95

07 KT 97

07 KT 98

07 SL 97

Compact PLC AC31 series 90

Description: see „Overview Central Units“. Integrated CS31 field bus.
Optional: Smart Media Card for saving data and user programm backup and battery (ref. accessories).

Types	Digital I/O (DI / DO / DC) integrated	Analogue I/O (AI / AO) integrated	Counter inputs	Program memory [kB]	Order Number	Weight 1 piece kg
07 KT 95	12 / 8 / –	4 / 2	2	480	**GJR 525 2800 R0200**	1.3
07 KT 96	24 / 16 / –	– / –	2	480	**GJR 525 2900 R0200**	1.3
07 KT 97	24 / 16 / 8	8 / 4	2	480	**GJR 525 3000 R0200**	1.3

Compact PLC AC31 series 90 – with up to 2 integrated communication processors

Description: see „Overview Central Units“. Integrated CS31 field bus.
Number I/Os identical with 07 KT 97.
Optional: Smart Media Card for saving data and user programm backup and battery (ref. accessories).

Type	Processor 1	Processor 2	Program memory [kB]	Order Number	Weight 1 piece kg
07 KT 97 - Profibus	PROFIBUS-DP	–	480	**GJR 525 3000 R0220**	1.3
07 KT 97 - CANopen	CANopen	–	480	**GJR 525 3000 R0280**	1.3
07 KT 97 - Ethernet	Ethernet	–	480	**GJR 525 3000 R0270**	1.3
07 KT 97 - ARCNET	ARCNET	–	480	**GJR 525 3000 R0260**	1.3
07 KT 97 - Ethernet - ARCNET	Ethernet	ARCNET	480	**GJR 525 3000 R0276**	1.3
07 KT 97 - Ethernet - Profibus	Ethernet	PROFIBUS-DP	480	**GJR 525 3000 R0272**	1.3
07 KT 97 - Ethernet - CANopen	Ethernet	CANopen	480	**GJR 525 3000 R0278**	1.3
07 KT 97 - Ethernet - Ethernet	Ethernet	Ethernet	480	**GJR 525 3000 R0277**	1.3
07 KT 97 - ARCNET - Profibus	ARCNET	PROFIBUS-DP	480	**GJR 525 3000 R0262**	1.3
07 KT 98 - Profibus	PROFIBUS-DP	–	1000	**GJR 525 3100 R0220**	1.3
07 KT 98 - CANopen	CANopen	–	1000	**GJR 525 3100 R0280**	1.3
07 KT 98 - DeviceNet	DeviceNet	–	1000	**GJR 525 3100 R0250**	1.3
07 KT 98 - Ethernet	Ethernet	–	1000	**GJR 525 3100 R0270**	1.3
07 KT 98 - ARCNET	ARCNET	–	1000	**GJR 525 3100 R0260**	1.3
07 KT 98 - Ethernet - ARCNET	Ethernet	ARCNET	1000	**GJR 525 3100 R0276**	1.3
07 KT 98 - Ethernet - Profibus	Ethernet	PROFIBUS-DP	1000	**GJR 525 3100 R0272**	1.3
07 KT 98 - Ethernet - CANopen	Ethernet	CANopen	1000	**GJR 525 3100 R0278**	1.3
07 KT 98 - Ethernet - Ethernet	Ethernet	Ethernet	1000	**GJR 525 3100 R0277**	1.3
07 KT 98 - ARCNET - Profibus	ARCNET	PROFIBUS-DP	1000	**GJR 525 3100 R0262**	1.3
07 KT 98 - ARCNET - CANopen	ARCNET	CANopen	1000	**GJR 525 3100 R0268**	1.3

Slot-PLC AC31 series 90 (PCI fullsize) – with up to 2 integrated communication processors

Description: see „Overview Central unit“. Integrated ARCNET communication processor and CS31 field bus.
With own power supply 24 V DC, idependent of PC. For operating systems MS-Windows like software package 907AC1131. Programming via PCI-interface or vial serial interface with second PC.
Optional: Smart Media Card for saving data and user programm backup and battery (ref. accessories).

Type	Number PC-Slots	Processor 2	Program memory [kB]	Order Number	Weight 1 piece kg
07 SL 97-ARCNET	1	–	480	**GJR 525 3400 R0160**	1.3
07 SL 97-ARCNET-Profibus	2	PROFIBUS-DP	480	**GJR 525 3400 R0162**	1.3
07 SL 97-ARCNET-DeviceNet	2	DeviceNet	480	**GJR 525 3400 R0165**	1.3

SST02798

07 DI 92

DC92 von links

07 DC 92

SST02998

07 AI 91

SST03598

07 KP 90

Digital I/O modules series 90

Description: see „Overview I/O modules“. Integrated CS31 field bus.
DC: Channels configurable as in- or outputs.

Type	Number DI / DO / DC	Input signal	Output signal	Details	Order Number	Weight 1 piece kg
07 DI 92	32 / – / –	24 V DC	–	input delay 7 ms	**GJR 525 2400 R0101**	0.25
07 DI 93-I	16 / – / –	24 V DC	–	input delay 1 ms. IP67. M12-connector s. acces.	**GJV 307 5613 R0202**	0.25
07 DO 93-I	– / – / 8	–	24 V DC / 2 A (T)		**GJV 307 5611 R0202**	0.25
07 DK 93-I	8 / 4 / –	24 V DC	24 V DC / 2 A (T)		**GJV 307 5623 R0202**	0.25
07 DC 91	16 / 8 / 8	24 V DC	24 V DC / 0,5 A (T)	input delay 7 ms	**GJR 525 1400 R0202**	0.25
07 DC 92	– / – / 8	24 V DC	24 V DC / 0,5 A (T)	input delay 7 ms in groups of 8 electrical isolation	**GJR 525 2200 R0101**	0.25
07 TC 90	– / – / –	– / – / –	–	Keypad controller for the connection of operating panels with up to 32 keys / switches and 32 LEDs on the CS31 bus, Voltage supply 24 V DC, without housing	**GJR 525 1800 R0101**	0.1
07 TC 91	– / – / –	– / – / –	–		**GJR 525 2700 R0101**	0.1

Analogue I/O modules series 90

Description: see „Overview I/O modules“. Integrated CS31 field bus.
AC: Channels configurable as in- or outputs.

Type	Number AI / AO / AC	Input signal	Output signal	Order Number	Weight 1 piece kg
07 AI 91	8 / – / –	± 10V, 0 ... 20mA, ± 50 mV, ± 500 mV, ± 5 V, PT100, PT1000, thermo-couple, 12 Bit	–	**GJR 525 1600 R0202**	0.25
07 AC 91*)	– / – / 16	± 10 V, 0 ... 20 mA, 4 ... 20 mA, 12 Bit	± 10 V, 0 ... 20mA, 4 ... 20 mA, 12 Bit	**GJR 525 2300 R0101**	0.25

*) incl. 1xDI for the shut-off of all AO of the module.
with 2 modes of operation: (1) 8 AI and 8 AO with 12 Bit resolution or (2) as pairs as AI or AO with 8 Bit.

Communication modules series 90

Further networking interfaces compac controllers AC31 series 90. Connection with the Central unit via ribbon cable. Voltage supply 24 V DC.

Type	Protocol	Software	Interfaces	Order Number	Weight 1 piece kg
07 KP 90	RCOM	included	2 (1) RCOM (RS232/RS485); (2) RS232 for commissioning	**GJR 525 1000 R0303**	0.45
07 KP 93	MODBUS	included	2 MODBUS, RTU, Master or Slave (RS232/RS485)	**GJR 525 3200 R1161**	0.4

ARCNET: Communication interfaces to PC

For the communication between ARCNET controllers and PC (programming, visualisation).

Type	Description	Order Number	Weight 1 piece kg
SH FARC E3 K	ARCNET-KOAX interface card for ISA bus, without RS485, transfer rate 2,5 Mbps	**1SAY 11 1401R0001**	
SH ARC PCI K	ARCNET-KOAX-interface card for PCI bus, transfer rate 2,5 Mbps	**1SAY 11 1402R0001**	
SH ARC PCMCIA	ARCNET-PCMCIA interface card (basic card)	**1SAY 11 1403R0001**	
SH KOAX- PCMCIA	KOAX interface module for basic card	**1SAY 11 1404R0001**	

Accessories series 90

Type	Accessory for	Description	Order Number	Weight 1 piece kg
07 SK 90	CPUs AC31 series 90 (KT94-S, KT95-KT98)	Programming cablel incl. adapter 25/9-poles. Cable lenght 5 m	**GJR 525 0200 R0001**	
07 SK 92		System cable for modem	**GJR 525 0400 R0001**	
07 MC 90	CPUs 07KT94-S and 07KT94	Smart Media Card for saving data and backup of user program, 2 MB	**GJR 525 2600 R0102**	
07 MC 90	CPUs 07KT95 / 96 / 97 / 98 and 07SL97	Smart Media Card for saving data and backup of user program, 8 MB	**GJR 525 2600 R0201**	
07 LE 90	CPUs AC31 series 90 (07KT94-S, 07KT95, 07KT98, 07SL97)	Lithium battery for data buffering	**GJR 525 0700 R0001**	
German		Manual for AC31 (as in software package 907 AC 1131) Complete hard- und software-description. Includes CD-ROM with documentation.	**1SAC 133 947 R0101**	
English			**1SAC 133 947 R0201**	
–	Digital IP67 I/O modules DI93-I, DO93-I, DK93-I	Plug 5 poles, M12 straight. Connection for basic I/Os with FE connection	**GJV 307 5617 R0001**	
–		Plug 5 poles. M12 bent. AConnection for basic I/Os with FE connection	**GJV 307 5618 R0001**	
–		Plug 4 poles. M12 straight for double connection.	**GJV 307 5624 R0001**	
–	RCOM coupler 07KP90	For commissioning interface Adapter for programming cable 07SK90	**GJV 307 3915 R0001**	
–	AC31-S: 07KP94-S	interface cable incl. adapter for KT94-S with operating panel (passive mode)	**GJR 525 0300 R0001**	
07 SK 93	07SL97 Slot CPU	Programmiing cable MIN DIN 8/PC-SUB D	**GJR 525 3500 R0001**	
07 SK 94		Communication cable MIN DIN 8/-	**GJR 525 3600 R0001**	

Programming package 907AC1131 (acc. to IEC61131-3)

For small PLC AC 31 series 40...50 (functionalities adjusted), compact PLC AC31 series 90 and Slot-PLC 07 SL 97. Operating system: Windows 98 / NT / 2000 / XP.

Description: see „Overview Software Package“.

Programming cable: see accessories.

Integrated: 6 programming languages, sampling trace, debugging, offline simulation, trace recording (mulitchannel) recipe management, visualisation, field bus configurators, online visualisation package and more.

Delivery includs: software, libraries and documentation on CD-ROM, update service.

Type	language Manual	Description	Order Number	Weight
907 AC 1131	German	Programming package version 5.0	**GJP 520 6900 R0102**	
907 AC 1131	English	Programming package version 5.0	**GJP 520 7000 R0102**	

Programming package AC31GRAF (based on IEC61131-3)

For small PLC AC 31 series 40...50. Operating system: Windows 98 / NT / 2000.
Description: see „Overview Software Package“.

Programming cable: see accessories.

Integrated: 4 programming languages,debugging, visualisation, and much more.
Can be used with previous PLC Central units type 30 series and 07KT91 ... KT94

Delivery includes: software, libraries and documentation on CD-ROM.

Type	Language Manual	Description	Order Number	Weight
AC31GRAF	English	Programming package	**1SBS 260 250 R0101**	
AC31GRAF	French	Programming package	**1SBS 260 251 R0101**	
AC31GRAF	Italian	Programming package	**1SBS 260 252 R0101**	

07 KT 94-S

07 DI 90-S

07 DO 90-S

07 AI 90-S

Safety PLC AC31-S, Central Unit

Description: see „Overview CPUs“. Integrated AC31 safety field bus.
For programming of safety-related and operation functions in one CPU.
Integrated I/O for operation signals (not safety-related). Decentrally expansible with I/O modules for operation and for safety related signals on the AC31 safety field bus.

Type	Digital I/O (DI / DO / DC) integrated	Analogue I/O (AI / AO) integrated	Counter inputs	Program memory [kB]	Order Number	Weight 1 piece kg
07 KT 94-S	24 / 16 / 8	8 / 4	2	240	**GJR 525 2100 R2101**	1.3
07 KT 94-S *) **ARCNET**	24 / 16 / 8	8 / 4	2	240	**GJR 525 2100 R2161**	1.3

*) ARCNET integrated

Safety In-/Output modules

Decentral, internally redundant I/O modules, safety-related, power supply 24 V DC.
Screw terminals. Integrated AC31 safety field bus connection, electric isolation against bus.

Type	Digital I/O DI / DO / AI	Input signal	Output signal	Fault detection	Order Number	Weight 1 piece kg
07 DI 90-S	8 / – / –	24 V DC	–	Fault detection: short circuit after 0V and UP, wire break, forbidden input level range, passive fault, internal faults like bus disconnection.	**GJR 525 0900 R0202**	0.25
07 DO 90-S	– / 8 / –	–	24 V DC / 20,5 A (T)	Fault detection: Overload, resp. short circuit after ZP, passive fault, internal fault.	**GJR 525 0800 R0202**	0.25
07 AI 90-S	– / – / 4	4 ... 20 A	–	Fault detection: area over or underrun, short circuit, wire break, passive fault, internal fault.	**GJR 525 1200 R0202**	0.25

Programming software for safety-related programming

For safety PLC AC 31-S. Operating system: MS-DOS.
Programming cable: see accessories.
The programming software consists of the packages 907 PC 33 + 907 PC 331 + 907 PC 339.

Type	Description	Language of manual	Order Number	Weight 1 piece kg
907 PC 33	General description of the programming interface. Also includes: manual	German	**GJP 520 3900 R0302**	
		English	**GJP 520 4000 R0302**	
907 PC 331	Programming and test software. Programming languages: IL, FBD, LD. Includes: programming software on disc, manuals, update service.	German	**GJP 520 4500 R0402**	
		English	**GJP 520 4600 R0402**	
907 PC 339	Add-on safety-related functions for programming software 907 PC 331. For AC31-S central unitr 07 KT94-S. Includes: safety manual, software on diss, update service.	German	**GJP 520 7500 R0102**	
		English	**GJP 520 7600 R0102**	

Bus repeater for CS31 field bus

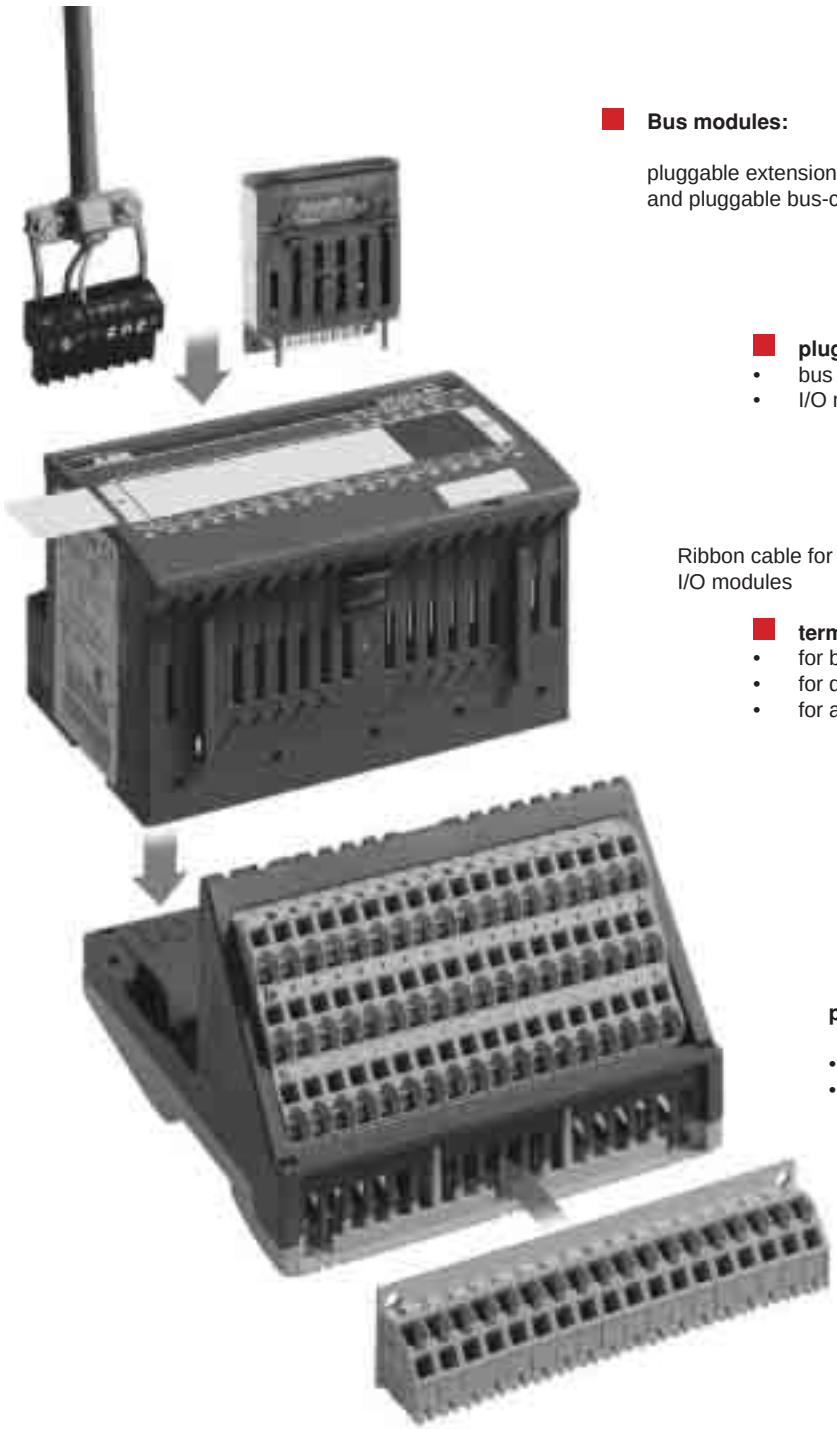
Type	Supply voltage	Description	Ordering Number	Weight 1 piece kg
NCB	24 V DC	Repeater for CS31 bus max. length 2000 m (3 repeaters)	**FPR 347 1200 R1002**	0.34
NCBR	24 V DC	Repeater for CS31 bus für redundant, ring or radial bus configuration	**FPR 347 1300 R1002**	0.34

Bus repeater for RS485 MODBUS RTU network

Type	Supply voltage	Description	Ordering Number	Weight 1 piece kg
NCBR-M	24 V DC	Repeater for MODBUS communiction. For redundant, ring or star shaped bus configuration	**1SBP 260 161 R1001**	0.34

S500 - decentral In-/Output modules
for PROFIBUS DP

The PROFIBUS DP I/O modules S500 consist of a pluggable electronics block and the respective terminal block. The bus connection is achieved via a bus module. Up to 7 extension modules can be connected to the bus module (via ribbon cable).
Applicable with controllers with a PROFIBUS DP connection.



Bus modules:

pluggable extension boxes
and pluggable bus-cable terminals

pluggable electronics block
- bus modules PROFIBUS DP
- I/O moduless

Ribbon cable for connecting of (further) I/O modules

terminal block
- for bus modules
- for digital I/O modules
- for analogue I/O modules

pluggable potential bar

- with screw terminals
- with spring-type terminals

S500 - decentral In-/Output modules
for PROFIBUS DP
Ordering data

2CDC331014F0003

DX 502-DP

2CDC331025F0003

TU502

2CDC331009F0003

DI501

2CDC331003F0003

AX501

S500 Bus modules for PROFIBUS DP

With bus connection to PROFIBUS DP. Integrated In-/Outputs. Centrally expansible with 7 expansion modules. Pluggable electronics module. The required, fitting terminal module for the connection of the I/Os has to be ordered seperately, also see next table.

Type	Integrated inputs, digital (DI)	Integrated outputs (DO)	Voltage supply	Transfer rate	Order Number	Weight 1 piece kg
DX501-DP	8	8 transistor, 0.5 A	24 V DC	1.5 Mbit/s	**1SVP 426 422 R0000**	0.150
DX502-DP	8	8 transistor, 0.5 A	24 V DC	12 Mbit/s	**1SVP 426 422 R5000**	0.150

S500 terminal modules for bus modules

3-wire connection, 4-wire connection via optional potential bar. Screw- or spring type terminal. Fuses (5 x 20 mm) for the in- and outputs. Mounting on DIN rail or with screws. Direct shield connection via DIN rail.

Type	Description	Order Number	weight 1 piece kg
TU501	with screw terminals	**1SVP 426 470 R0000**	0.230
TU502	with spring-type terminals	**1SVP 426 470 R1000**	0.290

S500 digital extension box for bus modules

One extension each (digital or analogue) can be plugged into the back side of the bus module.

Type	Integrated inputs, digital (DI)	Integrated outputs (DO)	Connection via	Order Number	Weight 1 piece kg
DI501	4	–	pluggable terminal block	**1SVP 426 463 R0000**	0.020

S500 analogue extension box for bus modules

0-10 V, resolution 8 Bit. One extension each (digital or analogue) can be plugged into the back side of the bus module.

Type	Integrated inputs, digital (DI)	Integrated outputs (DO)	Connection via	Order Number	Gewicht 1 Stück kg
AX501	3	1	pluggable terminal block	**1SVP 426 461 R0000**	0.020

S500 - decentral In-/Output modules
for PROFIBUS DP
Ordering data

2CDC331015F0003

DX511

S500 digital extension modules

Pluggable electronics module. The required, fitting terminal module for the connection of the I/Os has to be ordered seperately, also see next table..

Type	Integrated inputs, digital (DI)	Integrated outputs (DO)	Supply voltage	Order Number	Weight 1 piece kg
DX511	8	8 transistor, 0.5 A	24 V DC	**1SVP 426 450 R0000**	0.090
DI511	16	–	24 V DC	**1SVP 426 430 R0000**	0.090
DO511	–	16 transistor, 0.5 A	24 V DC	**1SVP 426 451 R0000**	0.900

2CDC331027F0003

DU511

S500 terminal modules for digital extension modules

3-wire connection, 4-wire connection via optional potential bar. Screw- or spring type terminal. Fuses (5 x 20 mm) for the in- and outputs. Mounting on DIN rail or with screws. Direct shield connection via DIN rail.

Type	Description	Order Number	Weight 1 piece kg
TU511	with screw terminals	**1SVP 426 471 R0000**	0.230
TU512	with spring-type terminals	**1SVP 426 471 R1000**	0.190

2CDC331004F0003

AX511

S500 analogue extension modules

Pluggable electronics module. The required, fitting terminal module for the connection of the I/Os has to be ordered seperately, also see next table..

Inputs: w 20 mA, w 10 V, 0 ... 20 mA, 4 ... 20 mA, 0 - 10 V

Outputs: w 20 mA, w 10 V, 0 ... 20 mA, 4 ... 20 mA

Resolution: 12 Bit (11 Bit + sign)

Typ	Integrated inputs, digital (AI)	Integrated outputss (AO)	Supply voltage	Order Number	Weight 1 piece kg
AI511	4	–	24 V DC	**1SVP 426 435 R0000**	0.110
AI512	8	–	24 V DC	**1SVP 426 436 R0000**	0.150
AX511	4	4	24 V DC	**1SVP 426 455 R0000**	0.150

2CDC331031F0003

TU526

S500 terminal modules for analogue extension modules

Screw- or spring type terminal. Mounting on DIN rail or with screws. Direct shield connection via DIN rail.

Type	Description	Order Number	Weight 1 piece kg
TU525	with screw terminals	**1SVP 426 473 R0000**	0.230
TU526	with spring-type terminals	**1SVP 426 473 R1000**	0.190

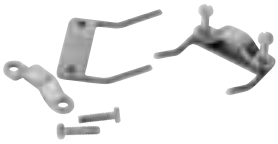
S500 - decentral In-/Output modules
for PROFIBUS DP
Ordering data

2CDC331016F0003

TA501

2CDC331017F0003

TA502


2CDC331018F0003

TA503

Accessories for S500

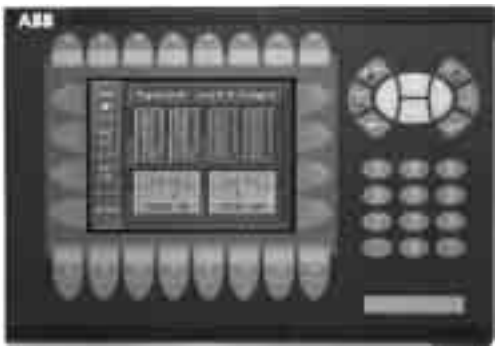
Type	Description	Order Number	Weight 1 piece kg
TA501	Potential bar with screw terminal (for 4-wire connection)	**1SVP 426 480 R0000**	0.020
TA502	Potential bar with spring-type terminal (for 4-wire connection)	**1SVP 426 480 R1000**	0.020
TA503	Cable shield for bus connection, 2 pieces	**1SVP 426 481 R0000**	0.010
TA504	Marking stripes, 10 pieces	**1SVP 426 482 R1000**	0.100
TA505	Fuse 5 x 20 mm 8 A, 10 pieces	**1SVP 426 483 R0000**	0.050
	Configuration data GSD PROFIBUS DP (Disc)	**1SVP 426 401 R5000**	0.010
	User manual German	**2CDC 124 002 M0101**	
	User manual English	**2CDC 124 002 M0201**	
	User manual French	**2CDC 124 002 M0301**	

Notes

Operator Terminals

CP501

CP501



CP513

CP513

CP555

CP555

PLC's

Communication between user and machine

The operator terminals CP5xx ideally fullfil the requirements of automated processes for more transparency and efficiency: they create insight into the activities and the conditions of machines and installations and they allow for an intervention into the proceedings that happen there.

To this end we offer an extensive line of operator terminals, that ranges from the basic CP 501 for the display of text to devices that provide a graphics screen to the touch-panel CP 555 with a color display. They communicate with the controllers of the Advant Controller 31 system and have read and write access to the data of these controllers.
The communication between operator terminal and controller happen via the serial interface. When running complex applications Ethernet or various other bus systems can also be used.

The same software is used for all devices for fast and easy configuration. The commands and programming language are identical for all devices.

The function keys of most devices consist of switchable 2-color LEDs, marking stripes allow for the labeling and thus support the convenient operator guidance.

The front cover of all devices offer protection class IP65.

Depending on the tpye, the operator terminals offer the following functions:

- Real-time clock
- Alarm mangement in numerous groups
- Trends
- Recipe management
- Print-outs of reports
- Pass-word protection
- Memory up to 1600 kB Flash

Operator Terminals
Overview

CP501

CP502

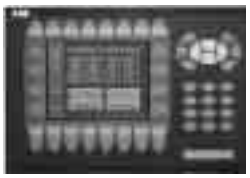
CP503

CP511

CP512

	CP501	CP502	CP503	CP511	CP512
Display type	STN-LCD with background illum.	STN-LCD with background illum.	STN-LCD with background illum.	STN-LCD with background illum.	B/W-STN-LCD with background illum.
Display	text	text	text	graphics und text	graphics and text
Display size	2 lines x 16 characters	2 lines x 20 characters	4 lines x 20 characters	240 x 64 Pixel	240 x 128 Pixel
Display area W x H (mm)	55.7 x 11.0	73.5 x 11.5	70.4 x 20.8	127.2 x 33.9	120.0 x 64.0
Text height (mm)	5	5	5	variable	variable
LEDs			5 (2 colors)	16 (2 colors)	16 (2 colors)
Function keys	4	3	5	8	16 (8 with labels to write on)
Web functions				P	P
Buzzer				P	P
Alarm management			1 groups	4 groups	4 groups
Time channel		P	P	P	P
Real-time clock		P	P	P	P
Trends				real time	trend
Recipe managment		P	P	P	P
Print-outs of reports		P	P	P	P
Pass-word protection		8 levels	8 levels	8 levels	8 levels
Multi language support		P	P	P	P
Memory for applications	16 kB Flash	64 kB Flash	64 kB Flash	400 kB Flash	400 kB Flash
Voltage supply	24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
Current consumption			150 mA	450 mA	450 mA
Ambient temperature	0 – 50 °C	0 – 50 °C	0 – 50 °C	0 – 50 °C	0 – 50 °C
Communication interface	RS232 oder RS422	RS232, RS422 RS485 (2 at the same time)	RS232, RS422	RS232, RS422	RS232, RS422
Extension slot	–	–	1	1	1
Protection class front cover	IP65	IP65	IP65	IP65	IP65
Dimensions W x H x D (mm)	104 x 69 x 38	142 x 100 x 29	147 x 163,5 x 38	211 x 198 x 69	214 x 232 x 87
Weight (kg)	0.2	0.5	0.7	1.5	1.4

Operator Terminals
Overview



CP513

CP551

CP552

CP554

CP555

CP513	CP551	CP552	CP554	CP555
Color-LCD with background illum.	Touch-B/W-STN with background illum.	Touch-LCD 16 gray scales	Color-Touch-Display, TFT	Color-Touch-Display, TFT
graphics and text	graphics and text	graphics and text	graphics and text	graphics and text
320 x 240 Pixel	320 x 240 Pixel	320 x 240 Pixel	320 x 240 Pixel	640 x 480 Pixel
115.2 x 86.4	78.0 x 58.5	115.2 x 86.,4	115.2 x 86.4	211.2 x 158.4
variable	variable	variable	variable	variable
16 (2 colors)				
16 (8 with labels to write on)				
P	P	P	P	P
P	P	P	P	P
16 groups	4 groups	5 groups	5 groups	11 groups
P	P	P	P	P
P	P	P	P	P
trend	trend	trend	trend	trend
P	P	P	P	P
P	P	P	P	P
8 levels	8 levels	8 levels	8 levels	8 levels
P	P	P	P	P
400 kB Flash	400 kB Flash	400 kB Flash	400 kB Flash	1600 kB Flash
24 V DC	24 V DC	24 V DC	24 V DC	24 V DC
550 mA	450 mA	400 mA	450 mA	1 A
0 – 50 °C	0 – 50 °C	0 – 50 °C	0 – 50 °C	0 – 50 °C
RS232, RS422	RS232, RS422 RS485 (2 at the same time)	RS232, RS422 RS485 (2 at the same time)	RS232, RS422 RS485 (2 at the same time)	RS232, RS422
2		1	1	2
IP65	IP65	IP65	IP65	IP65
276 x 198 x 89	138 x 100 x 30	200 x 150 69	200 x 150 x 69	290 x 250 x 105
1.7	1.4	1.5	1.5	3.3

Operator Terminals
Ordering data

Operator Terminals with text display

- LCD with background illumination
- Voltage supply 24 V DC
- CP502/503: with real-time clock
- Recipe management
- Pass word protection in 8 levels
- Multi language support

CP502

Type	Lines	characters/ line	Function/ other keys	LEDs	Interfaces	Order Number	Weight 1 piece kg
CP501	2	16	4		RS232 or RS422	**1SBP 260170 R1001**	0.2
CP502	2	20	3 / 20		RS232, RS422, RS485	**1SBP 260171 R1001**	0.5
CP503	4	20	5 / 22	5	RS232, RS422	**1SBP 260172 R1001**	0.7

Operator Terminals with graphics display

- LCD with background illumination
- CP513 with color display
- Voltage supply 24 V DC
- Graphics- and text display
- Real-time clock
- Trends
- Recipe management
- Pass word protection in 8 levels
- Multi language support
- Memory 400 kB

CP511

Type	Pixel	Function/ other keys	LEDs	Interfaces	Order Number	Weight 1 piece kg
CP511	240 x 64	8 / 22	16	RS232, RS422	**1SBP 260173 R1001**	1.5
CP512	240 x 128	16 / 22	16	RS232, RS422	**1SBP 260174 R1001**	1.4
CP513	320 x 240	16 / 22	16	RS232, RS422	**1SBP 260175 R1001**	1.7

Operator Terminals with touch-display

- LCD with background illumination
- CP555 with TFT color-display
- Voltage supply 24 V DC
- Graphics- and text display
- Real-time clock
- Trends
- Recipe management
- Pass word protection in 8 levels
- Multi language support
- Memory 400 kB (CP555: 1600 kB)

CP555

Type	Pixel	Display	Interfaces	Order Number	Weight 1 piece kg
CP551	320 x 240	B/W - STN	RS232, RS422, RS485	**1SBP 260176 R1001**	1.4
CP552	320 x 240	B/W - STN	RS232, RS422, RS485	**1SBP 260177 R1001**	1.5
CP554	320 x 240	Color TFT	RS232, RS422, RS485	**1SBP 260178 R1001**	1.5
CP555	640 x 480	Color TFT	RS232, RS422	**1SBP 260179 R1001**	3.3

Operator Terminals
Ordering data

Programming cable

Type	Interface	Ordering Number	Weight 1 piece kg
CAB5	RS232	**1SBN 260210 R1001**	
CAB6	RS422	**1SBN 260211 R1001**	

Communications cable

Type	Controller	Ordering Number	Weight 1 piece kg
CAB45	series 40 / 50 MiniDin	**1SBN 260213 R1001**	
CAB90	series 90	**1SBN 260214 R1001**	
CAB8	Transformer RS422/RS485	**1SBN 260212 R1001**	

Programming software for operator terminals CP500

For all operator panels CP500, delivery on CD-ROM.
Includes documentation for all operating panels CP500.

Type	Description	Ordering Number	Weight 1 piece kg
CP500soft	Software, documentation on CD	**1SBS 260283 R1001**	

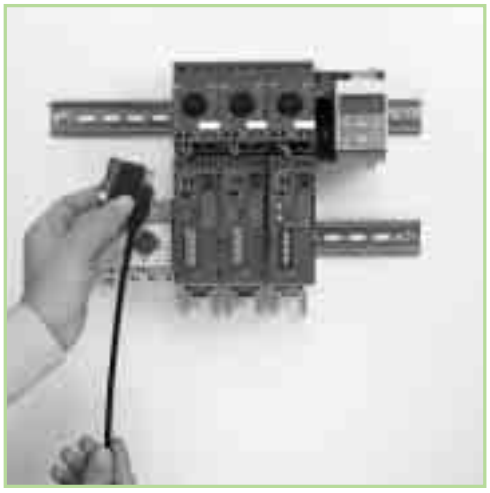
Dokumentation

Manuals without software.

Type	Description	Ordering Number	Weight 1 piece kg
pdf	handbuch, German	**1SBC 159002 M0101**	
pdf	Documentation CP Tools, German	**1SBC 159002 M0201**	

Accessories

Type	Description	Ordering Number	Weight 1 piece kg
CK516	Add-on keyboard	**1SBP 260180 R1001**	
IFCPBDP	Communication interface PROFIBUS DP	**1SBN 260320 R1001**	
IFCETTP	Communication interface Ethernet	**1SBN 260322 R1001**	
IFC-PI	Printer interface	**1SBN 260325 R1001**	
IFC-MC	Interface for Smart Media Card	**1SBN 260324 R1001**	
PCMCIA 4MB	Smart Media Card 4 MB	**1SBN 260326 R1001**	
PCMCIA 8MB	Smart Media Card 8 MB	**1SBN 260327 R1001**	
Protection sheet CP552	Protection sheet for display CP552	**1SBN 260328 R1001**	
Protection sheet CP555	Protection sheet for display CP555	**1SBN 260329 R1001**	
Protection sheet CP551	Protection sheet for display CP551	**1SBN 260330 R1001**	
Protection sheet CP554	Protection sheet for display CP554	**1SBN 260331 R1001**	



FBP FieldBusPlug

Communicative Switching and Automation components

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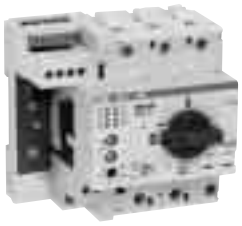
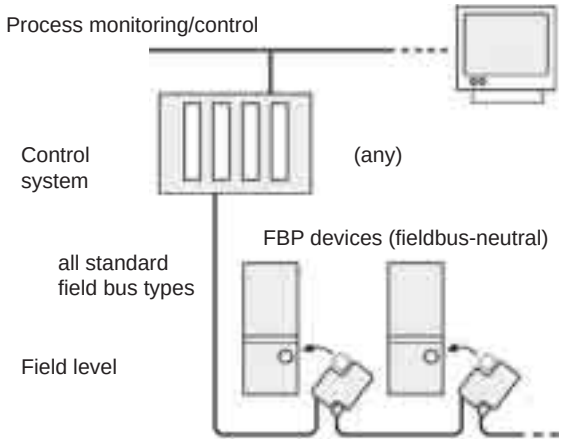
FBP FieldBusPlug
System Description - General Informationen

The FBP system connects switching devices and other similar components via any fieldbus types with usual automation systems (PLCs) in a simple and cost-efficient way. The switching devices are independent of the chosen fieldbus type. Connection to the various fieldbus types is established via the fieldbus-specific FieldBusPlug cables (FBP cables).



One device for all field bus types

Each device, and each function module within the product familiy, has a fieldbus-neutral interface. A specially prefabricated connection cable establishes the communications connections with its bus-specific plug interface. In this way, flexibility, transparency and reliability in the process are achieved. The connecting, operating and diagnostic elements are placed at the front of all devices providing increased ease of installation.



The components

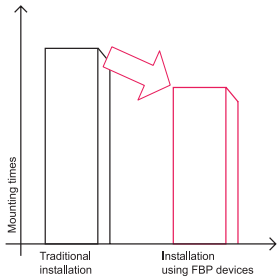
The FieldBusPlug cable is used inside as well as outside of the control cabinet. Particularly for usage outside of the control cabinet the FBP cable complies with IP65, being at the same time a small and robust device excellently suitable for industrial usage.
One of the outstanding advantages is the presence of the 24 V DC supply voltage inside the FBP cable which makes additional wiring unnecessary because the available current is sufficient for most applications.
Examples of typical devices for conntection are sensors, push-buttons/switches, signal lamps, motor contactors, motor branch connections, etc.

The FieldBusPlug connects

The FieldBusPlug provides a name to the new product family as a connecting element.
The various FieldBusPlugs can be used with different fieldbus types.
The definitions of the respective fieldbus standards apply.

FBP FieldBusPlug
System Description - General Informationen

The FieldBusPlug system, with its new installation concept, opens a multitude of further possibilities for centralized and decentralized applications. Simple integration into the process, the compact and space-saving designs of the devices, the flexibility during planning and designing as well as the cost-effective assembly and commissioning are further application-specific features. This offers considerably effects for the conception of a machine or plant:

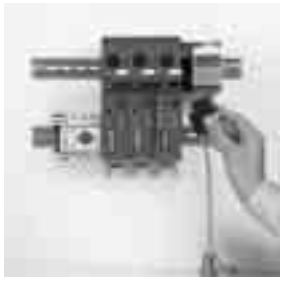


Shorter throughput and realization times

Until now, wiring and cabling has been expensive and time-consuming in machines and plants. Standardized plug-in fieldbus connections now provide fast installation and the highest level of flexibility.

Higher quality in machines and plants

Prefabricated devices, plug-in technology and less wiring expenditure reduce failures. Standards make general planning and project planning more reliable, the assembly more effective and reduce the commissioning time.

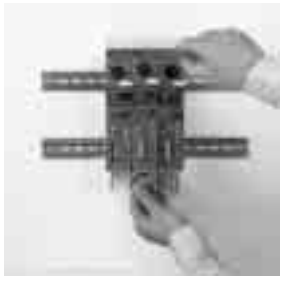


Smaller control cabinets

The FBP product range includes particularly compact device versions. The products provide a high level of functionality in minimal space. For example, the small dimensions of the only 45 mm wide reverse motor starter MSR22-FBP makes additional space in the control cabinet.

Improved response time

Reacting flexibly to customer requirements means being able to carry out modifications even shortly before completion. All devices can be replaced in a minimum of time. Due to the devices' independence of the fieldbus type, the determination of the field bus system can be made just before the control cabinet is to be delivered.



Effortless connection to the process

The FBP system also shows its high adaptabilitywhen inserted into the automation level and thus into the process. With the aid of standardized software functions, the FBP components and automation devices can be integrated into the process via standard fieldbusses. Via the fieldbus, all device information are transmitted to the automation level and thus can be visualized in the entire process. Which data are forwarded depends on the performance data of the chosen fieldbus system.

Increased availability of machines and plants

The FBP components have extensive diagnostic functions. For example, the status of each FBP device and fieldbus plug as well as of the bus is indicated by LEDs. Depending on the functionality of the device, a preventive diagnostic function enables preventive maintenance (e.g. by counting the number of switching cycles) and operating data of the motor can be displayed on an operating panel.
This allows possible malfunctions to be recognized before downtimes and production failures occur. An occurring error can be visualized thanks to the communication ability of the components and can therefore be remedied faster.

FBP FieldBusPlug

Survey - Fields of Application for FBP Terminal Devices

Function

UMC22-FBP

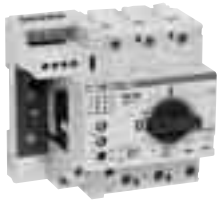
- Integrated motor control functions
- Integrated digital inputs and outputs
- Adjustable trip categories
- Adjustable change-over times
- Storage of the device data settings
- Preventive diagnostic function
- One device for all currents from 0.24 to 63 A

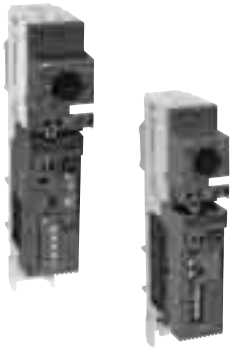
MFI21-FBP

- Side-mountable to motor protecting switch MS325
- Integrated motor control functions
- Integrated digital inputs and outputs
- Digital input for direct acquisition of the MS325 switch position
- Adjustable change-over times
- Preventive diagnostic function

MSD11-FBP and MSR22-FBP

- Direct or reverse operation
- Integrated line protection
- Ready-made complete device
- Compact space-saving design
- Direct PE connection to the motor connector
- Device replacement without removal of the comb-shaped bar





12 A 25 A Rated motor current 63 A

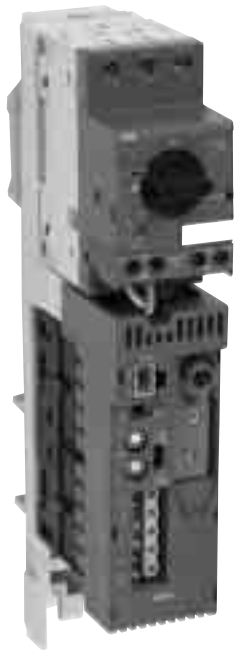
Applicability of device functions depending on the fieldbus system performance	FieldBusPlug terminal devices				Terminal device functions completely usable with FieldBusPlug ...			
Device functions	MSD11-FBP	MSR22-FBP	MFI21-FBP	UMC22-FBP	ASD11-FBP (AS-Interface)	ASP22-FBP (AS interface)	PDP22-FBP (PROFIB. DP)	DNP22-FBP (DeviceNet)
Integrated motor control functions								
Direct starting	x		x	x	x	x	x	x
Reverse starting		x	x	x		x	x	x
Positioner				x			x	x
Star-delta starting			x	x		x	x	x
Transparent mode			x	x			x	x

For detailed technical information please refer to the FieldBusPlug system documentation (see page 9/20)

Communicative motor starters - compact devices

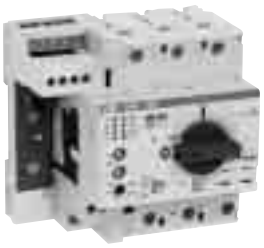
Motorstarter Direct
MSD11-FBP

Dimensions	45 x 260 x 120 (138) mm
Mounting	DIN rail, on 1 or 2 rails as desired (spacing 125 mm), usage of 2 rails increases vibration resistance
Optional	Woehner conductor rail system adapter, Rittal, Germany
Degree of protection	IP 20
Power feeding	Comb-shaped rail or cable
Operating voltage V_i	400 V AC, 50 and 60 Hz, three-phase current
Control voltage feeding	Simplest feeding via bus connector; switchable to ext. feeding
External attachment plug	1.5 mm^2 max. (supplied on delivery)
Control voltage	24 V DC (+ 30%, - 20%)
Motor connection	Plug-in conn. on front-side (plug supplied on del.) L1, L2, L3, PE
Conductor cross section	2.5 mm^2 max.
Motor protection	Integr. motor protecting switch MS116 (overload, short-circuit)
Conductor cross section	2 x 1...4 mm^2 (single- or multiple-wire) 2 x 0.75...2.5 mm^2 (fine-wire with wire-end ferrules)
Nominal current ranges	11
Applicability	0.1...12 A
Short-circuit capacity ICS	50 kA (0.1 - 6.3 A), 12.5 kA (6.3 - 10 A), 10 kA (10 - 12 A)
Switching frequency (motor starting)	max. 15 starts per hour max. 60 starts per hour at 40 % duty ratio and $t_{starting}$ = 1 s
Contactor	Integrated contactor B7
Contact rating	12 A max., AC-3, 400 V AC
Contact lifetime	700,000 switching cycles at 12 A, AC-3
Integrated diagnostic functions	LED for control voltage LED for contactor switch position LED for motor protection



Motorstarter Reverse
MSR22-FBP

Dimensions	45 x 260 x 120 (150) mm
Mounting	DIN rail, on 1 or 2 rails as desired (spacing 125 mm), usage of 2 rails increases vibration resistance
Optional	Woehner conductor rail system adapter, Rittal, Germany
Degree of protection	IP 20
Power feeding	Comb-shaped rail or cable
Operating voltage V_i	400 V AC, 50 and 60 Hz, three-phase current
Control voltage feeding	Simplest feeding via bus connector; switchable to ext. feeding
External attachment plug	1.5 mm^2 max. (supplied on delivery)
Control voltage	24 V DC (+ 30%, - 20%)
Motor connection	Plug-in conn. on front-side (plug supplied on del.) L1, L2, L3, PE
Conductor cross section	2.5 mm^2 max.
Motor protection	Integr. motor protecting switch MS116 (overload, short-circuit)
Conductor cross section	2 x 1...4 mm^2 (single- or multiple-wire) 2 x 0.75...2.5 mm^2 (fine-wire with wire-end ferrules)
Nominal current ranges	11
Applicability	0.1...12 A
Short-circuit capacity ICS	50 kA (0.1 - 6.3 A), 12.5 kA (6.3 - 10 A), 10 kA (10 - 12 A)
Switching frequency (motor starting)	max. 15 starts per hour max. 60 starts per hour at 40 % duty ratio and $t_{starting}$ = 1 s
Contactor	Integrated contactor 2 x B7
Contact rating	12 A max., AC-3, 400 V AC
Contact lifetime	700,000 switching cycles at 12 A, AC-3
Integrated diagnostic functions	LED for control voltage LED for contactors switch positions LED for motor protection



Motorstarter Fieldbus
Interface MFI21-FBP

Communicative motor starters with control functions

Dimensions	36 (90) x 90 x 70 mm
Mounting	DIN rail
	Mechanical coupling to motor protecting switch MS 325
Degree of protection	IP 20
Power feeding	see MS 325
Control voltage feeding	simplest feeding via bus connector; switchable to ext. feeding
Connection	max. 1.5 mm^2
Control voltage	24 V DC (+ 30%, - 20%)
Motor connection	see MS 325
Conductor cross section terminals	max. 1 x 2.5 mm^2 or max. 2 x 1.5 mm^2
Integrated inputs	3 digital inputs 24 V DC 1 digital input, mechanically coupled with MS325 switch position
Integrated outputs	3 relay outputs with common supply
Voltage switching capacity	24 V AC/DC ... 250 V AC/DC
Current switching cap. per relay 240 V AC (AC 15) 120 V AC (AC 15) 250 V DC (DC 13) 24 V DC (DC 13)	 max. 1.5 A max. 3 A max. 0.11 A max. 1 A
Load current via common	I_{max} = 4 A (thermal limit)
Relay contact lifetime	> 5 x 10^6 switching cycles - mechanical lifetime > 1 x 10^6 switching cycles - at 230 V AC, 0.5 A
Protective circuits with inductive loads	for direct current free-wheeling diodes, for alternating current varistors / VDRs
Integrated control functions	Direct starting, reverse starting, star-delta starting, transparent mode (not for AS-Interface)
Diagnosis at the device	LED - Control voltage LED - Internal supply voltage LED - Device error LED - Status of the digital inputs and outputs Contactor switching cycles count and data transmission to the automation device (not for AS-Interface)

Note:
MS325 is not supplied on delivery (see chapter 4 - Motor Protecting Switches)

FBP FieldBusPlug
Survey - FBP Terminal Device Data

Universal Motor Controller UMC22-FBP

Communicative motor starters with control functions

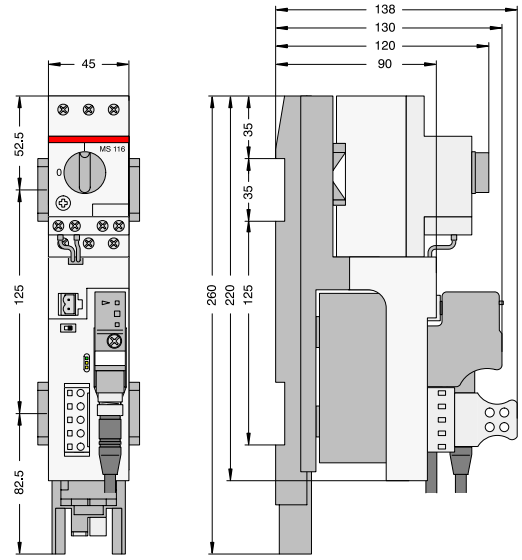
Dimensions	70 x 105 x 87,5 (110) mm
Mounting	On DIN rail or with screws (4 screws M4)
Degree of protection	IP 20
Power feeding	Bar-type current transf. max. 25 mm^2 (max. diameter. = 11 mm)
Operating voltage U_e	690 V AC, 50 and 60 Hz, 3-phase AC
Nominal motor current	0.24 ... 63 A
Short-circuit protection	By fuse on mains side
Control voltage feeding	Simplest feeding via bus connector; switchable to ext. feeding
Connection	max. 1.5 mm^2
Control voltage	24 V DC (+30%, -20%)
Conductor cross section terminals	max. 1 x 2.5 mm^2 or max. 2 x 1.5 mm^2
Integrated inputs	6 digital inputs 24 V DC
Integrated outputs	3 relay outputs with common supply
Voltage switching capacity	24 V AC/DC ... 250 V AC/DC
Current switching cap. per relay 240 V AC (AC 15) 120 V AC (AC 15) 250 V DC (DC 13) 24 V DC (DC 13)	 max. 1.5 A max. 3 A max. 0.11 A max. 1 A
Load current via common	I_{max} = 4 A (thermal limit)
Relay contact lifetime	> 5 x 10^6 switching cycles - mechanical lifetime > 1 x 10^6 switching cycles - at 230 V AC, 0.5 A
Protective circuits with inductive loads	For direct current free-wheeling diodes, For alternating current varistors / VDRs
Integrated control functions	Direct starting, reverse starting, star-delta-starting, Positioner, transparent mode (not for AS-Interface)
Integrated motor protection functions	Adjustm. of starting and change-over times via operat. panel Error acknowledgement via operating panel or bus Selectable disabling of outputs on error (PLC or bus) Overload monitoring / phase failure detection Integrated storage of parameters and motor data
Integrated diagnostic functions	LED for control voltage LED for "motor running" LED for "device ready for operation" LED for state indication of digital inputs and outputs Contactor switching cycles count and data transmission to automation device (not for AS-Interface)
Optional operating panel	For adjustment and visualization of motor and device data as well as of bus parameters

FBP FieldBusPlug
Survey - Device Data Overview

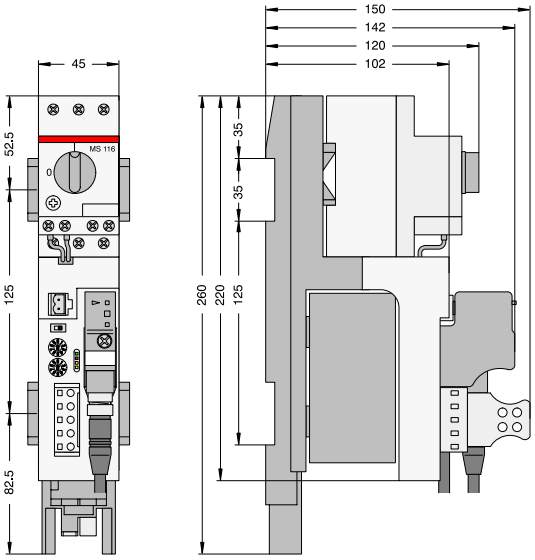
FieldBusPlug terminal devices FieldBusPlug bus connectors	FieldBusPlug terminal devices				Full usability of terminal device functions with FieldBusPlug ...				Remarks
Functions and technical data	MSD11-FBP	MSR22-FBP	MFI21-FBP	UMC22-FBP	ASD11-FBP (AS interface)	ASP22-FBP (AS interface)	PDP22-FBP (Profibus DP)	DNP22-FBP (DeviceNet)	For detailed technical information please refer to the FieldBusPlug system documentation
Features									
Usage without fuse protection	x	x	x						see data sheet in FBP document.
Switching frequency (motor starting)	x	x							max. 15 starts/h, max. 60 starts/h at 40% duty ratio, start. time = 1 s
Fuse on line side required				x					
Operating voltage	400 V			690 V					AC, 50 and 60 Hz
Control voltage	24 V DC (+ 30%, - 20%)								
Current range up to max.	12 A			63 A					
Curr. range with MS325 up to max.			25 A						
Integrated motor control functions									
Direct starting	x		x	x	x	x	x	x	
Reverse starting		x	x	x		x	x	x	
Positioner				x			x	x	
Star-delta starting			x	x		x	x	x	
Transparent mode			x	x			x	x	
Integrated motor monitoring									
Short-circuit, overload	x	x							power path is switched off
Overload, phase failure				x					trip category 5, 10, 20, 30
Integrated inputs and outputs									
3 digital inputs			x			x	x	x	24 V DC
6 digital inputs				x			x	x	24 V DC
1 additional digital input			x			x	x	x	mechanical coupling with MS325
3 digital relay outputs			x	x		x	x	x	250 V AC, 24 V DC, 2 A max.
Integrated diagnostic functions									
LED supply voltage	x	x	x	x	x	x	x	x	green
LED switch pos. contactor(s)	x	x							yellow
LED switch pos. motor protection	x	x							yellow
LED bus failure					x	x	x	x	red
LED function failure		x	x	x	x	x	x	x	red
LED motor running				x					yellow
LED for states of digital I/Os			x	x					yellow
Bus info contactors	x	x	x	x	x	x	x	x	Information to PLC
Bus info motor protection			x				x	x	Information to PLC
Bus info motor current				x			x	x	Information to PLC
Bus info switching cycles count			x	x			x	x	Information to PLC
Parameter settings									
Change-over time via potentiometer			x						fixed basic time 50 ms
Change-over time via operat. panel				x					fixed basic time 50 ms
Change-over time via PLC program			x	x			x	x	fixed basic time 50 ms
Motor current	x	x	x		x	x	x	x	at the motor protecting switch
Motor current, trip category				x		x	x	x	optional operating panel
Motor current, trip category				x			x	x	PLC program
Mounting									
Mounting on DIN rail	x	x	x	x					35 mm DIN rail
Mounting on 2 DIN rails	x	x							increased vibration resistance
Mounting by screws				x					4 screws M4
Connections and conductor cross sections									
Connecting terminals	x	x	x	x					1 x 2.5 or 2 x 1.5 mm^2 max.
PE tapping directly on DIN rail	x	x							to motor connecting plug
Bus connection via FBP conn.	x	x	x	x	x	x	x	x	
Bushing-type transformer				x					25 mm^2 max. (diameter 11 mm)
Ambient conditions									
Degree of protection IP20	IP 20				IP65				
Storage temp. - 40 ... + 80°C	x	x	x	x	x	x	x	x	
Operating temp. 0 ... + 55°C	x	x	x	x	x	x	x	x	
Approvals									
CE, UL, CSA, GL, BV, LRS	x	x	x	x	x	x	x	x	partly in preparation

FBP FieldBusPlug
Dimensioned Drawings

Communicative motor starters - compact devices

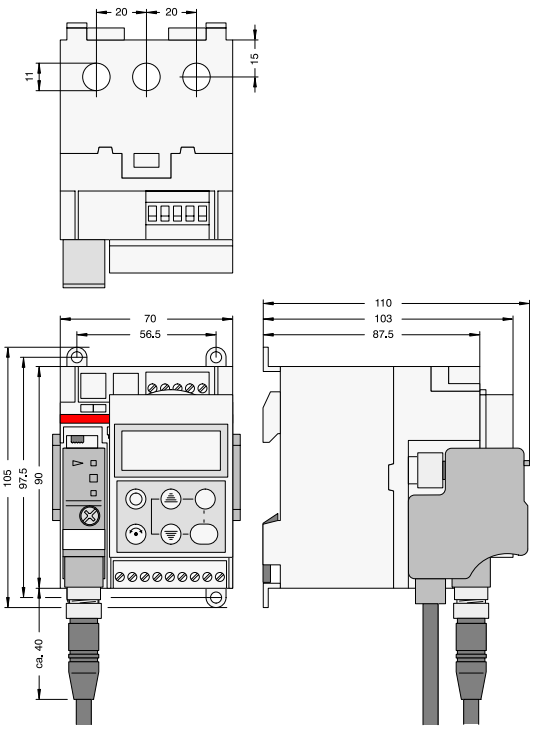


Motorstarter Direct MSD11-FBP

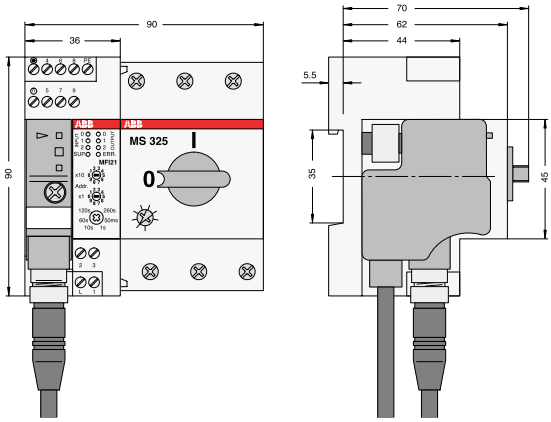


Motorstarter Reverse MSR22-FBP

Communicative motor starters with control functions



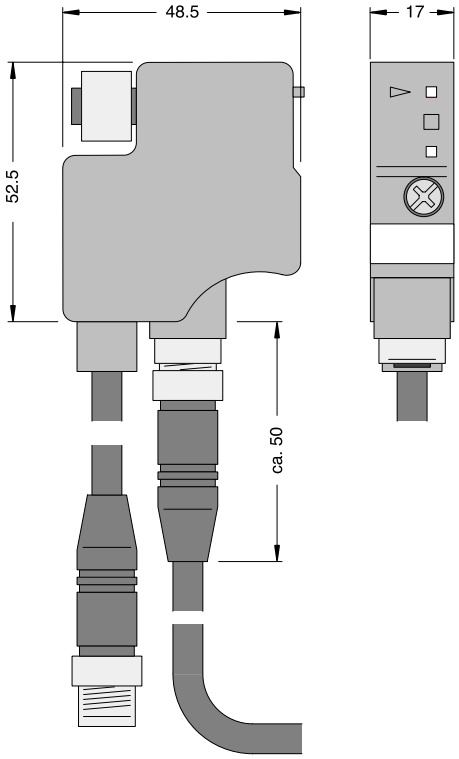
Universal Motor Controller UMC22-FBP



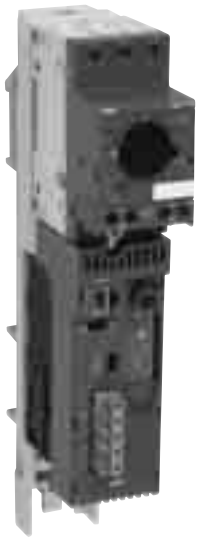
Motor Fieldbus Interface MFI21-FBP

FBP FieldBusPlug
Dimensioned Drawings

FieldBusPlugs



AS-Interface FieldBusPlug Direct	ASD11-FBP
AS-Interface FieldBusPlug Performance	ASP22-FBP
PROFIBUS DP FieldBusPlug	PDP21-FBP
DeviceNet FieldBusPlug	DNP21-FBP
CANopen FieldBusPlug	COP21-FBP
Modbus FieldBusPlug	MRP21-FBP

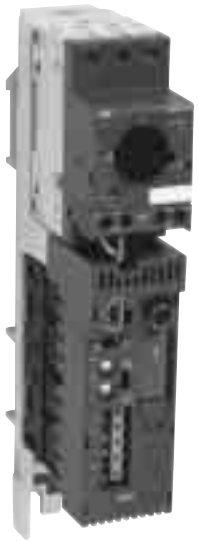


MSD11-FBP

Motor Starter Direct MSD11-FBP

Fuseless motor branch circuit for 1 motor, 1 direction of rotation, IP 20.
Motor protection with thermal and electromagnetic tripping.
Compact device with fieldbus-independent interface for connection to FBP fieldbus connector.
400 V AC, 12 A max., incl. motor connecting plug and plug for external control voltage (24 V DC).

Type	Motor Starter Direct Setting range	I_{cs} kA	Order number	Pack. size	Weight p. piece kg
MSD11-FBP.0.16	0.1-0.16A	50	1SAJ 310 000 R0001	1	0.65
MSD11-FBP.0.25	0.16-0.25A	50	1SAJ 310 000 R0002	1	0.65
MSD11-FBP.0.4	0.25-0.4A	50	1SAJ 310 000 R0003	1	0.65
MSD11-FBP.0.63	0.4-0.63A	50	1SAJ 310 000 R0004	1	0.65
MSD11-FBP.1	0.63-1.0A	50	1SAJ 310 000 R0005	1	0.65
MSD11-FBP.1.6	1.0-1.6A	50	1SAJ 310 000 R0006	1	0.65
MSD11-FBP.2.5	1.6-2.5A	50	1SAJ 310 000 R0007	1	0.65
MSD11-FBP.4	2.5-4.0A	50	1SAJ 310 000 R0008	1	0.65
MSD11-FBP.6.3	4.0-6.3A	50	1SAJ 310 000 R0009	1	0.65
MSD11-FBP.10	6.3-10.0A	12.5	1SAJ 310 000 R0010	1	0.65
MSD11-FBP.12	10.0-12A	10	1SAJ 310 000 R0011	1	0.65



MSR22-FBP

Motor Starter Reverse MSR22-FBP

Fuseless motor branch circuit for 1 motor, 2 directions of rotation, IP 20.
Motor protection with thermal and electromagnetic tripping.
Compact device with fieldbus-independent interface for connection to FBP fieldbus connector.
400 V AC, 12 A max., incl. motor connecting plug and plug for external control voltage (24 V DC).

Type	Motor Starter Reverse Setting range	I_{cs} kA	Order number	Pack. size	Weight p. piece kg
MSR22-FBP.0.16	0.1-0.16A	50	1SAJ 320 000 R0001	1	0.85
MSR22-FBP.0.25	0.16-0.25A	50	1SAJ 320 000 R0002	1	0.85
MSR22-FBP.0.4	0.25-0.4A	50	1SAJ 320 000 R0003	1	0.85
MSR22-FBP.0.63	0.4-0.63A	50	1SAJ 320 000 R0004	1	0.85
MSR22-FBP.1	0.63-1.0A	50	1SAJ 320 000 R0005	1	0.85
MSR22-FBP.1.6	1.0-1.6A	50	1SAJ 320 000 R0006	1	0.85
MSR22-FBP.2.5	1.6-2.5A	50	1SAJ 320 000 R0007	1	0.85
MSR22-FBP.4	2.5-4.0A	50	1SAJ 320 000 R0008	1	0.85
MSR22-FBP.6.3	4.0-6.3A	50	1SAJ 320 000 R0009	1	0.85
MSR22-FBP.10	6.3-10.0A	12.5	1SAJ 320 000 R0010	1	0.85
MSR22-FBP.12	10.0-12A	10	1SAJ 320 000 R0011	1	0.85

PS1-x-0

S1-M1 S1-M2

Accessories for Motor Starters MSD11-FBP and MSR22-FBP

Busbar blocks for MSD11-FBP and MSR22-FBP for cross-wiring.
Feeder blocks for busbar blocks for MSD11-FBP and MSR22-FBP.
Max. current-carrying capacity 63 A, conductor cross section 25/16 mm^2 multiple/fine-wire.

Type	Designation	Order number	Pack. size	Weight p. piece kg
PS1-2-0	Busbar block for 2 devices	1SAM 201 906 R1002	10	0.08
PS1-3-0	Busbar block for 3 devices	1SAM 201 906 R1003	10	0.11
PS1-4-0	Busbar block for 4 devices	1SAM 201 906 R1004	10	0.15
PS1-5-0	Busbar block for 5 devices	1SAM 201 906 R1005	10	0.19
S1-M1	Feeder block, flat design	1SAM 201 907 R1001	10	0.17
S1-M2	Feeder block, high design	1SAM 201 907 R1002	10	0.06

Note: For system accessories and documentation please refer to page 9/20.

FBP FieldBusPlug
Communicative Motor Starters with Control Functions

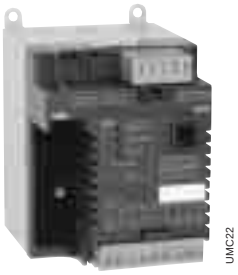
MFI21-FBP

Motor Starter Fieldbus Interface MFI21-FBP

Fieldbus interface, IP20, for coupling to motor protecting switch MS325 [1)]
Integrated motor control functions: Direct starting, reverse starting, star-delta starting.
Diagnostic functions, integrated potentiometer.
3 digital inputs, 3 relay outputs, 1 direct-coupled digital input for switch position detection of MS325, fieldbus-independent interface for connection to FBP fieldbus connectors.

Type	Designation	Order number	Pack. size	Weight p. piece kg
MFI21-FBP.0	Motor Starter Fieldbus Interface	1SAJ 410 000 R0100	1	0.12

1) For motor protecting switch MS325 and accessories for MS325 please refer to chapter 4 - Motor Protecting Switches



UMC22-FBP

Universal Motor Controller UMC22-FBP

Universal motor controller with thermal overload protection 0.24 - 63 A in a single device type.
Bushing-type transformer, cable cross section 25 mm^2 (max. diameter incl. insulation = 11 mm).
Integrated motor control functions: Direct starting, reverse starting, star-delta starting, Positioner functions.
Diagnostic functions: Overload, phase failure, trip categories 5, 10, 20, 30.
Integrated storage of parameters and motor data.
6 digital inputs, 3 relay outputs.
Fieldbus-independent interface for connection to FBP fieldbus connectors, interface to operating panel ACS100-PAN.

Type	Designation	Nominal motor current	Order number	Pack. size	Weight p. piece kg
UMC22-FBP.0	Universal Motor Controller	0.24 - 63 A	1SAJ 510 000 R0100	1	0.36

ACS100-PAN

Accessories for Universal Motor Controller UMC22-FBP

Operating, diagnostics and parameter setting panel for Universal Motor Controller UMC22-FBP.
Setting of motor and bus parameters.

Type	Designation	Usage with	Order number	Pack. size	Weight p. piece kg
ACS100-PAN	Operating panel	UMC22-FBP	1SAJ 510 001 R0001	1	0.04

Accesories for operating panel ACS100-PAN

Extension cable 3 m and door mounting set IP65 (front side) for ACS100-PAN operating panel

Type	Designation	Usage with	Order number	Pack. size	Weight p. piece kg
ACS100-CAB	Extension cable with door mountig set	ACS100-PAN	1SAJ 510 002 R0001	1	0.40

Note: For system accessories and documentation please refer to page 9/20.

FBP FieldBusPlug
Further FBP Terminal Devices

1SDC210305F0004 1SDC210306F0004

Tmax T4/T5

Communicative Power Circuit Breakers Tmax T4 / T5

FBP interface module for connection to the FieldBusPlug.
For technical details see chapter 11 - Circuit Breakers.

1SFC132013F0201

Soft Starter PST

Communicative Soft Starter PST

Compact device with fieldbus-neutral interface for connection to the FieldBusPlug.
For technical details see chapter 3 - Soft Starters.

SST-054-97

Inductive
Position Sensor

Position sensors inductiv and capacitive

PNP-NO with M12 connection, operating at all FieldBusPlugs.
For technical details see chapter 7 - Position Sensors.

Note: For system accessories and documentation please refer to page 9/20.

FBP FieldBusPlug
AS -Interface FieldBusPlug
Ordering Data

ASD11-FBP

AS-Interface FieldBusPlug Direct

Ready-made AS-Interface slave fieldbus interface with various cable lengths.
Applicable with MSD11-FBP and terminal devices with max. 2 input and 1 output signals.
Degree of protection IP65, diagnostic LED.

Type	Designation	Cable length	Order number	Pack. size	Weight p. piece kg
ASD11-FBP.025	AS-Interface FBP Direct	0.25 m	1SAJ 210 000 R0003	1	0.09
ASD11-FBP.050	AS-Interface FBP Direct	0.50 m	1SAJ 210 000 R0005	1	0.10
ASD11-FBP.100	AS-Interface FBP Direct	1.00 m	1SAJ 210 000 R0010	1	0.13
ASD11-FBP.500	AS-Interface FBP Direct	5.00 m	1SAJ 210 000 R0050	1	0.34

ASP22-FBP

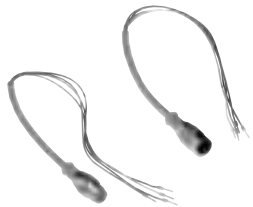
AS-Interface FieldBusPlug Performance

Ready-made AS-i slave fieldbus interface with various cable lengths.
Applicable with all FBP motor starters and terminal devices with max. 4 input and 3 output signals.
Degree of protection IP65, diagnostic LED.

Type	Designation	Cable length	Order number	Pack. size	Weight p. piece kg
ASP22-FBP.025	AS-Interface FBP Performance	0.25 m	1SAJ 220 000 R0003	1	0.09
ASP22-FBP.050	AS-Interface FBP Performance	0.50 m	1SAJ 220 000 R0005	1	0.10
ASP22-FBP.100	AS-Interface FBP Performance	1.00 m	1SAJ 220 000 R0010	1	0.13
ASP22-FBP.500	AS-Interface FBP Performance	5.00 m	1SAJ 220 000 R0050	1	0.34

Note: For system accessories and documentation please refer to page 9/20.

Accessories for the AS-Interface Bus Connection



ASF11-FBP.030
ASM11-FBP.030

AS-Interface round cables for bus junctions

Ready-made bus cable with M12 connector and open cable end.
Applicable for bus junctions such as e.g. AS-Interface couplers or devices with integrated AS-Interface communication.

Type	AS-Interface round cable for bus junctions	Cable length	Order number	Pack. size	Weight p. piece kg
ASF11-FBP.030	Round cable with female connector	0.30 m	1SAJ 922 002 R0003	1	0.03
ASM11-FBP.030	Round cable with male connector	0.30 m	1SAJ 922 003 R0003	1	0.03

ASX11-FBP

AS-Interface round cables for bus extensions

Ready-made AS-Interface bus cable, round cable with M12 female and male connectors (ASX11-FBP.xxx), AS-Interface bus cable, round cable on coil (ASC11-FBP.999).

Type	AS-Interface extension cables	Cable length	Order number	Pack. size	Weight p. piece kg
ASX11-FBP.100	Ready-made	1.00 m	1SAJ 922 001 R0010	1	0.08
ASX11-FBP.300	Ready-made	3.00 m	1SAJ 922 001 R0030	1	0.18
ASX11-FBP.500	Ready-made	5.00 m	1SAJ 922 001 R0050	1	0.28
ASC11-FBP.999	Coil	100 m	1SAJ 922 004 R1000	1	5.20

ASM11-FBP.0

ASF11-FBP.0

AST11-FBP.0

AS-Interface accessories for the bus extension

Type	AS-Interface cable connectors	Order number	Pack. size	Weight p. unit kg
ASM11-FBP.0	Male AS-Interface round c. conn.	1SAJ 922 005 R0001	5	0.15
ASF11-FBP.0	Female AS-Interf. round c. conn.	1SAJ 922 006 R0001	5	0.15
AST11-FBP.0	Flat cable branch circuit with M12 socket (junction to round cable)	1SAJ 922 007 R0001	1	0.11

AS-Interface addressing unit, miscellaneous accessories

Type	Designation	Order number	Pack. size	Weight p. piece kg
ASA21-FBP.0	Addressing unit incl. plug-in power supply unit	1SAJ 922 010 R0001	1	0.56

Note: For system accessories and documentation please refer to page 9/20.

FBP FieldBusPlug
PROFIBUS DP/DPV1 FieldBusPlug
Ordering Data

PROFIBUS DP FieldBusPlug

Ready-made PROFIBUS DP fieldbus interface with various cable lengths.
Applicable with all FBP motor starters and other terminal devices.
Degree of protection IP65, diagnostic LED.

Type	Designation	Cable length	Order number	Pack. size	Weight p. piece kg
PDP21-FBP.025	PROFIBUS DP-FBP	0.25 m	1SAJ 240 000 R0003	1	0.09
PDP21-FBP.050	PROFIBUS DP-FBP	0.50 m	1SAJ 240 000 R0005	1	0.10
PDP21-FBP.100	PROFIBUS DP-FBP	1.00 m	1SAJ 240 000 R0010	1	0.13
PDP21-FBP.500	PROFIBUS DP-FBP	5.00 m	1SAJ 240 000 R0050	1	0.36

PROFIBUS DPV1 FieldBusPlug

Ready-made PROFIBUS DPV1 fieldbus interface with various cable lengths.
Applicable with all FBP motor starters and other terminal devices, .
Degree of protection IP65, diagnostic LED.

(On request)

Note: For system accessories and documentation please refer to page 9/20.

PDF11-FBP.050

PDM11-FBP.050

Accessories for the PROFIBUS DP/DPV1 Bus Connection

PROFIBUS DP/DPV1 round cables for bus junctions

Ready-made bus cable with M12 connector and open cable end.
Applicable for bus junctions such as e.g. PROFIBUS DP/DPV1 couplers or devices with integrated Profibus DP/DPV1 communication.

Type	PROFIBUS DP/DPV1 round cable for bus junctions	Cable length	Order number	Pack. size	Weight p. piece kg
PDF11-FBP.050	Round cable with female connector	0.50 m	1SAJ 924 002 R0005	1	0.04
PDM11-FBP.050	Round cable with male connector	0.50 m	1SAJ 924 003 R0005	1	0.04

PDX11-FBP

PROFIBUS DP/DPV1 round cables for the bus extension

Ready-made PROFIBUS DP/DPV1 bus cable, round cable with M12 female and male connectors (PDX11-FBP.xxx).
PROFIBUS DP/DPV1 bus cable, round cable on coil (PDC11-FBP.999).

Type	PROFIBUS DP/DPV1 extension cable	Cable length	Order number	Pack. size	Weight p. piece kg
PDX11-FBP.100	Ready-made	1.00 m	1SAJ 924 001 R0010	1	0.08
PDX11-FBP.300	Ready-made	3.00 m	1SAJ 924 001 R0030	1	0.20
PDX11-FBP.500	Ready-made	5.00 m	1SAJ 924 001 R0050	1	0.31
PDC11-FBP.999	Coil	100 m	1SAJ 924 004 R1000	1	5.60

PDF11-FBP.0

PDM11-FBP.0

PROFIBUS DP/DPV1 accessories for the bus extension

Type	PROFIBUS DP/DPV1 cable connectors	Order number	Pack. size	Weight p. piece kg
PDM11-FBP.0	Male round cable connector	1SAJ 924 005 R0001	1	0.03
PDF11-FBP.0	Female round cable connector	1SAJ 924 006 R0001	1	0.03

PDR11-FBP.150

PROFIBUS DP/DPV1 line termination, feeding connector, adaptor

Type	Designation	Order number	Pack. size	Weight p. piece kg
PDR11-FBP.150	Line termination 150 Ohm	1SAJ 924 007 R0001	1	0.03
PDV11-FBP.0	Feeding connector 24 V DC	1SAJ 924 008 R0001	1	0.04
PDV11-FBP.050	Adaptor M12-Dsub9-M12 cable length 2 x 0.50 m	1SAJ 924 009 R0005	1	0.04

PDV11-FBP.0

FBP FieldBusPlug

DeviceNet and CANopen FieldBusPlugs and Acessories Ordering Data

DNP21-FBP
COP21-FBP

DeviceNet FieldBusPlug

Ready-made DeviceNet fieldbus interface with various cable lengths. Applicable with all FBP motor starters and other terminal devices. Degree of protection IP65, diagnostic LED.

Type	Designation	Cable length	Order number	Pack. size	Weight p. piece kg
DNP21-FBP.025	DeviceNet-FBP	0.25 m	1SAJ 230 000 R0003	1	0.09
DNP21-FBP.050	DeviceNet-FBP	0.50 m	1SAJ 230 000 R0005	1	0.10
DNP21-FBP.100	DeviceNet-FBP	1.00 m	1SAJ 230 000 R0010	1	0.13
DNP21-FBP.500	DeviceNet-FBP	5.00 m	1SAJ 230 000 R0050	1	0.36

CANopen FieldBusPlug

Ready-made CANopen fieldbus interface with various cable lengths. Applicable with all FBP motor starters and other terminal devices. Degree of protection IP65, diagnostic LED.

Type	Designation	Cable length	Order number	Pack. size	Weight p. piece kg
COP21-FBP.025	CANopen-FBP	0.25 m	1SAJ 230 100 R0003	1	0.09
COP21-FBP.050	CANopen-FBP	0.50 m	1SAJ 230 100 R0005	1	0.10
COP21-FBP.100	CANopen-FBP	1.00 m	1SAJ 230 100 R0010	1	0.13
COP21-FBP.500	CANopen-FBP	5.00 m	1SAJ 230 100 R0050	1	0.36

DNF11-FBP.050

DNM11-FBP.050

Accessories for DeviceNet/CANopen bus connection

DeviceNet/CANopen round cables for bus junctions

Ready-made bus cable with M12 connector and open cable end.
Applicable for bus junctions such as e.g. DeviceNet/CANopen couplers or devices with integrated DeviceNet/CANopen communication.

Type	DeviceNet/CANopen round cables for bus junctions	Cable length	Order number	Pack. size	Weight p. piece kg
DNF11-FBP.050	Round cable with female plug	0.50 m	1SAJ 923 002 R0005	1	0.04
DNM11-FBP.050	Round cable with male plug	0.50 m	1SAJ 923 003 R0005	1	0.04

DNX11-FBP

DeviceNet/CANopen round cable for the bus extension

Ready-made DeviceNet/CANopen bus cable, round cable with M12 female and male connectors (DNX11-FBP.xxx).
DeviceNet/CANopen bus cable, round cable on coil (DNC11-FBP.999).

Type	DeviceNet/CANopen extension cables	Cable length	Order number	Pack. size	Weight p. piece kg
DNX11-FBP.100	Ready-made	1.00 m	1SAJ 923 001 R0010	1	0.08
DNX11-FBP.300	Ready-made	3.00 m	1SAJ 923 001 R0030	1	0.20
DNX11-FBP.500	Ready-made	5.00 m	1SAJ 923 001 R0050	1	0.31
DNC11-FBP.999	Coil (drop cable)	100 m	1SAJ 923 004 R1000	1	5.60

DNF11-FBP.0

DNM11-FBP.0

DeviceNet/CANopen accessories for the bus extension

Type	DeviceNet/CANopen cable connectors	Order number	Pack. size	Weight p. unit kg
DNM11-FBP.0	Round cable male plug	1SAJ 923 005 R0001	5	0.15
DNF11-FBP.0	Round cable female plug	1SAJ 923 006 R0001	5	0.15

DNR11-FBP.120

DeviceNet/CANopen termination resistor and miscellaneous accessories

Type	DeviceNet/CANopen Bus accessories	Order number	Pack. size	Weight p. piece kg
DNR11-FBP.120	Terminating resistor 120 Ohm	1SAJ 923 007 R0001	1	0.02

Note: For system accessories and documentation please refer to page 9/20.

FBP FieldBusPlug

MODBUS-RTU FieldBusPlugs and Accessories
Ordering Data

MRP21-FBP

MODBUS-RTU FieldBusPlug

Ready-made MODBUS-RTU fieldbusinterface with various cable lengths.
Applicable with all FBP motor starterns and other terminal devices.
Degree of protection IP65, diagnostic LED.

Type	Designation	Cable length	Order number	Pack. size	Weight p. piece kg
MRP21-FBP.025	Modbus-RTU-FBP	0.25 m	1SAJ 250 000 R0003	1	0.09
MRP21-FBP.050	Modbus-RTU-FBP	0.50 m	1SAJ 250 000 R0005	1	0.10
MRP21-FBP.100	Modbus-RTU-FBP	1.00 m	1SAJ 250 000 R0010	1	0.13
MRP21-FBP.500	Modbus-RTU-FBP	5.00 m	1SAJ 250 000 R0050	1	0.36

Accessories for the MODBUS-RTU bus connection

MRF11-FBP.050

MRM11-FBP.050

MODBUS-RTU round cables for bus junctions

Ready-made bus cable with an M12 plug and an open cable end.
Applicable with bus junctions such as MODBUS-RTU couplers or devices with an integrated MODBUS-RTU communication.

Type	MODBUS-RTU round cable for bus junctions	Cable length	Order number	Pack. size	Weight p. piece kg
MRF11-FBP.050	Round cable with female plug	0.50 m	1SAJ 925 002 R0005	1	0.04
MRM11-FBP.050	Round cable with male plug	0.50 m	1SAJ 925 003 R0005	1	0.04

MRX11-FBP

MODBUS-RTU round cable for the bus extension

Ready-made MODBUS-RTU bus cable, round cable with M12 male and female plugs (MRX11-FBP.xxx).
MODBUS-RTU bus cable, round cable as a coil (MRC11-FBP.999).

Type	MODBUS-RTU extension cables	Cable length	Order number	Pack. size	Weight p. piece kg
MRX11-FBP.100	Ready-made	1.00 m	1SAJ 925 001 R0010	1	0.08
MRX11-FBP.300	Ready-made	3.00 m	1SAJ 925 001 R0030	1	0.20
MRX11-FBP.500	Ready-made	5.00 m	1SAJ 925 001 R0050	1	0.31
MRC11-FBP.999	Coil	100 m	1SAJ 925 004 R1000	1	5.60

MODBUS-RTU Accessories for the bus extension

MRM11-FBP.0

MRF11-FBP.0

MRR11-FBP.120

Type	MODBUS-RTU cable connectors	Order number	Pack. size	Weight p. unit kg
MRM11-FBP.0	Round cable male plug	1SAJ 925 005 R0001	5	0.15
MRF11-FBP.0	Round cable female plug	1SAJ 925 006 R0001	5	0.15

MODBUS-RTU termination resistor and other accessories

Type	MODBUS-RTU bus accessories	Order number	Pack. size	Weight p. piece kg
MRR11-FBP.120	Terminating resistor 120 Ohm	1SAJ 925 007 R0001	1	0.02

Note: For system accessories and documentation please refer to page 9/20.

FieldBusPlug addressing labels

For addressing the FieldBusPlug connectors.

Type	Designation	Order number	Pack. size	Weight p. unit kg
CAL11-FBP.0	Addressing labels for FBPs	1SAJ 929 005 R0001	400	0.15

FieldBusPlug power supply unit

Supply voltage 90...260 V AC, 47...63 Hz.
Adjustable output voltage 23...28 V DC, 5 A.

Type	Designation	Order number	Pack. size	Weight p. piece kg
CP-24/5.0	Power supply unit 24 V / 5 A	1SVR 423 416 R0100	1	0.58

FBP addressing set for PROFIBUS DP/DPV1, DeviceNet, CANopen, MODBUS

For setting the FieldBusPlug connector address (PROFIBUS DP/DPV1, DeviceNet, CANopen, MODBUS-RTU). Consisting of software package for notebook, level converter incl. battery and cable to notebook.

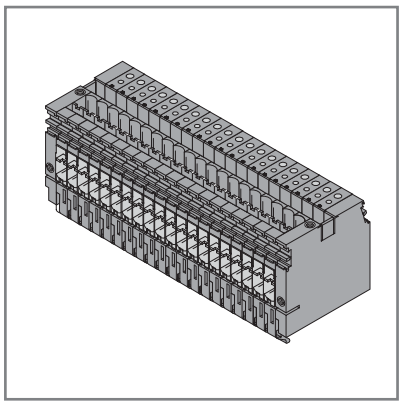
Type	Designation	Order number	Pack. size	Weight p. piece kg
CAS21-FBP.0	Addressing set for PROFIBUS DP/DPV1, DeviceNet, CANopen, MODBUS-RTU	1SAJ 929 003 R0001	1	0.40

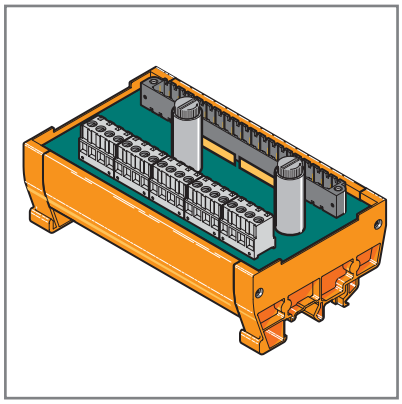
FieldBusPlug system documentation

Complete system documentation for planning and project planning.
Technical data, software, examples, FAQs.

Type	Designation		Order number	Pack. size	Weight p. piece kg
FieldBusPlug documentation	Printed version in file incl. CD-ROM version	German	2CDC 130 002 Z0101	1	2.00
FieldBusPlug documentation	Printed version in file incl. CD-ROM Version	English	2CDC 130 002 Z0201	1	2.00
FieldBusPlug documentation	CD-ROM version	German	2CDC 190 008 E0103	1	0.01
FieldBusPlug documentation	CD-ROM version	English	2CDC 190 008 E0201	1	0.01

Notes





Interfast for ABB PLC

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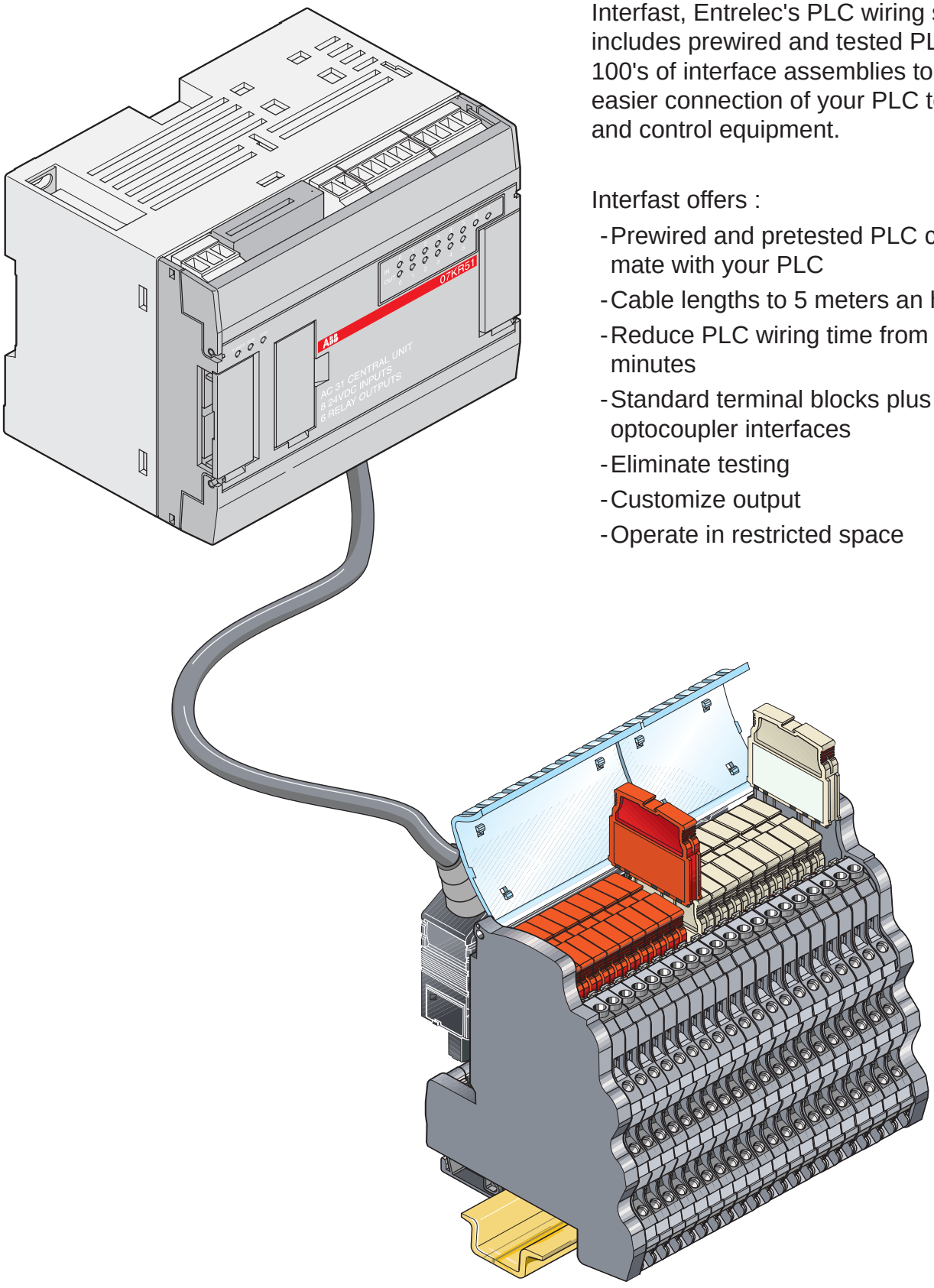
Interfast for ABB PLC
Overview

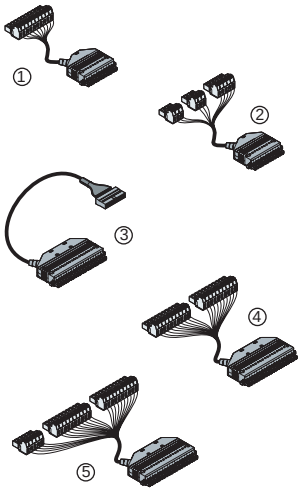


Interfast, Entrelec's PLC wiring system, includes prewired and tested PLC plus 100's of interface assemblies to allow easier connection of your PLC to field and control equipment.

Interfast offers :

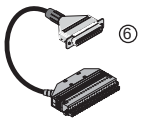
- Prewired and pretested PLC cables mate with your PLC
- Cable lengths to 5 meters an higher
- Reduce PLC wiring time from hours to minutes
- Standard terminal blocks plus relay and optocoupler interfaces
- Eliminate testing
- Customize output
- Operate in restricted space

Interfast for ABB PLC
Ordering Details



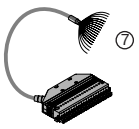
AC31 - Pre-wired cable looms

PLC Card			Type of connector intefaces	Type of decoupling interfaces	2 Mtr cable	Type
07CR41/42	24 VDC	8 input	12 way Omniconnect	8 opto	1SNA **036 912** R**01**00	①
07KR51	24 VDC	6 output	12 way Omniconnect		1SNA **036 906** R**14**00	②
ICMK14F1/14F1-M	24 VDC					
07CR41/42	120/230 V	8 input	12 way Omniconnect		1SNA **036 912** R**01**00	①
07KR51	120/230 V	6 output	12 way Omniconnect		1SNA **036 906** R**14**00	②
ICMK14F1/14F1-M	120/230 V					
07CT41/42	24 VDC	8 input	12 way Omniconnect	8 opto	1SNA **036 912** R**01**00	①
07KT51	24 VDC	6 output	12 way Omniconnect	8 relay / 8 opto	1SNA **036 906** R**14**00	②
ICMK14N1/N1-M	24 VDC					
XI16E1		Channel 1 to 8	12 way Omniconnect	8 opto	1SNA **036 918** R**17**00	①
		Channel 9 to 16	12 way Omniconnect	8 opto	1SNA **036 930** R**17**00	①
XO16N1		Channel 1 to 8	12 way Omniconnect	8 relay / 8 opto	1SNA **036 924** R**05**00	①
		Channel 9 to 16	12 way Omniconnect	8 relay / 8 opto	1SNA **036 930** R**17**00	①
XC32L1/L2			2 x 20 way Omniconnect	2 x 16 relay / 16 opto	2 x 1SNA **039 002** R**20**00	③
07DC92		Channel 1 to 16	20 way Omniconnect	16 relay / 16 opto	1SNA **036 936** R**01**00	④
		Channel 17 to 32	20 way Omniconnect	16 relay / 16 otpo	1SNA **036 942** R**17**00	⑤



S800 - Pre-wired cable looms

PLC Card	Type of connector intefaces	Type of decoupling interfaces	2 Mtr cable	Type
DI 810 / 814 / 830	20 way Omniconnect	16 opto	1SNA **036 900** R**22**00	⑥
DI 811 / 831 / 885	20 way Omniconnect		1SNA **036 900** R**22**00	⑥
DO 810 / 814	20 way Omniconnect	16 relay / 16 opto	1SNA **036 900** R**22**00	⑥
DP 820	20 way Omniconnect		1SNA **036 900** R**22**00	⑥
AI 810 / 820 / 830 / 835	20 way Omniconnect		1SNA **036 900** R**22**00	⑥
AO 810 / 820	20 way Omniconnect		1SNA **036 900** R**22**00	⑥
DI 801	20 way Omniconnect	16 opto	1SNA **038 038** R**22**00	⑦
DI 802 / 803 / 820 / 821	20 way Omniconnect		1SNA **038 038** R**22**00	⑦
DO 801	20 way Omniconnect	16 relay / 16 opto	1SNA **038 038** R**22**00	⑦
DO 802 / 815 / 820 / 821	20 way Omniconnect		1SNA **038 038** R**22**00	⑦
AI 801	20 way Omniconnect		1SNA **038 038** R**22**00	⑦
AO 801	20 way Omniconnect		1SNA **038 038** R**22**00	⑦



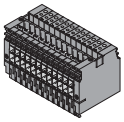
AC31 / S800 - Multipurpose Cables

Type of Cable	Cable Length	Order Code
OMNI 20 pts	2 meters	1SNA **038 038** R**22**00
OMNI 12 pts	2 meters	1SNA **026 169** R**26**00

If your PLC card is not in the list please contact us.

Interfast for ABB PLC
Ordering Details

Omniconnect Connection Interface channels 8

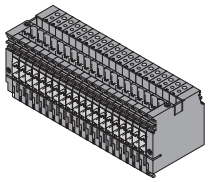


Connection Interface

Type	8 Channels	16 Channels	32 Channels
Single Wire	1SNA **621 016** R1100	1SNA **621 017** R1200	1SNA **631 001** R2500
Two Wire	1SNA **631 024** R1300	1SNA **631 025** R1400	
Disconnect	1SNA **631 016** R1300	1SNA **631 017** R1400	
Fused	1SNA **631 012** R1700	1SNA **631 013** R1000	

Interfaces without LED's only. For Interfaces with LED's, contact us.

Omniconnect Connection Interface channels 16

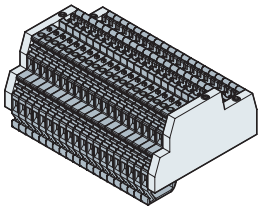


Connection Interface

Type	8 Channels	16 Channels
2 Wire		1SNA **631 031** R1200
2 / 3 / 4 Wire	1SNA **631 054** R2000	1SNA **631 055** R2200
2 / 3 / 4 Wire Interrupt	1SNA **631 082** R1600	1SNA **631 083** R1700
2 / 3 / 4 Wire Fused	1SNA **631 098** R2600	1SNA **631 099** R2700

Interfaces without LED's only. For Interfaces with LED's, contact us.

Omniconnect Connection Interface channels 32



Relay Terminal (1SPDT) - Decoupling Interface

Type	8 Channels	16 Channels
Negative Common	1SNA **631 143** R2700	1SNA **631 125** R1500
Negative / Positive Common	1SNA **631 182** R1700	1SNA **631 181** R1600
Spare Relay Plug	1SNA **031 820** R1400	1SNA **031 820** R1400

Omniconnect MS Interfaces Decoupling interface channels 8

Optocoupler Terminal - Decoupling Interface

Type		8 Channels	16 Channels
Universal Interface		1SNA **631 177** R2100 *	1SNA **631 179** R0300 **
Spare Input Opto plug			
	5 VDC	1SNA **031 831** R0300	1SNA **031 831** R0300
	24 VDC	1SNA **031 800** R2100	1SNA **031 800** R2100
	48 VDC	1SNA **031 801** R1600	1SNA **031 801** R1600
	125 VDC	1SNA **031 845** R1100	1SNA **031 845** R1100
	24 VAC	1SNA **031 802** R1700	1SNA **031 802** R1700
	48 VAC	1SNA **031 803** R1000	1SNA **031 803** R1000
	115 VAC	1SNA **031 804** R1100	1SNA **031 804** R1100
	230 VAC	1SNA **031 805** R1200	1SNA **031 805** R1200
Spare Output Opto plug			
	48 VDC / 100 mA	1SNA **031 810** R1200	1SNA **031 810** R1200
	48 VDC / 1 A	1SNA **031 819** R1700	1SNA **031 819** R1700
	24 VDC / 2 A	1SNA **031 815** R0300	1SNA **031 815** R0300
	250 VAC / 700 mA	1SNA **031 839** R1300	1SNA **031 839** R1300
Spare Strap plug	ST1	1SNA **031 829** R1500	1SNA **031 829** R1500
	ST2	1SNA **031 830** R1600	1SNA **031 830** R1600

* 8 channels : For this interface, use up to 8 input plugs or up to 8 output plugs (always use 3 ST1 plugs and 1 ST2 plug).

** 16 channels : For this interface, use up to 16 input plugs or up to 16 output plugs (always use 2 ST1 plugs and 2 ST2 plugs).

Omniconnect MS Interfaces Decoupling interface channels 16

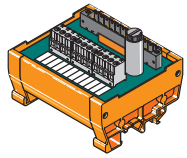
Universal Interface

Type	8 Channels	16 Channels
Negative / Positive Common	1SNA **631 158** R0600	1SNA **631 151** R2700
Negative / Positive Common, Leds on supplies	1SNA **631 177** R2100	1SNA **631 179** R0300
Negative / Positive Common, Leds on signal and supplies	1SNA **631 178** R0000	1SNA **631 180** R2100

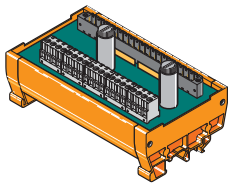
Please contact us for range of plugs.

Interfast for ABB PLC
Ordering Details

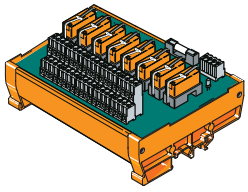
Omniconnect Connector Interface channels 8



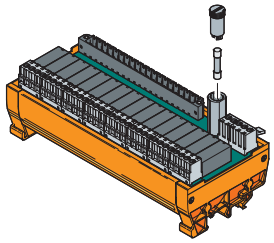
Omniconnect Connector Interface channels 16



Omniconnect Decoupling interface channels 8



Omniconnect Decoupling interface channels 16



Connector Interface

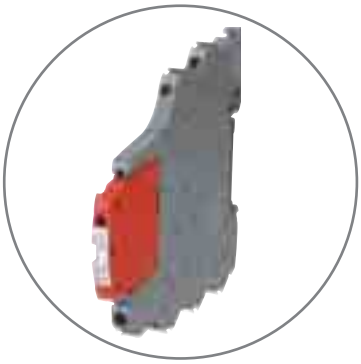
Type	8 Channels	16 Channels	32 Channels
Single Wire	1SNA **021 024** R0300	1SNA **021 025** R0400	1SNA **021 021** R0000
Two Wire		1SNA **021 041** R1400	1SNA **021 098** R1600
Three Wire	1SNA **021 048** R2300	1SNA **021 049** R2400	1SNA **021 096** R0400
Disconnect (single wire)	1SNA **021 032** R0300	1SNA **021 033** R0400	1SNA **021 097** R0500
Fused (three wire)	1SNA **021 052** R1300	1SNA **021 053** R1000	

Interfaces without LED's only. For Interfaces with LED's, contact us.

Relay Interface - Decoupling Interface

Type	8 Channels	16 Channels
1 n/o relay, 24 VDC supply		1SNA **021 080** R1000
1 SPDT relay, 24 VDC supply	1SNA **021 084** R0000	1SNA **021 082** R0600
1 SPDT relay, 24 VDC supply fuse on common contact	1SNA **021 073** R1400	1SNA **020 927** R1400
2 DPDT relay, 24 VDC supply	1SNA **021 074** R1500	1SNA **020 930** R2300

Large range of interfaces available to suit any application. Please contact us.



Interface Relays
Optocouplers

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Relay modules R1800 ..... **3**/75

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R500 pluggable optocoupler modules **3**/80
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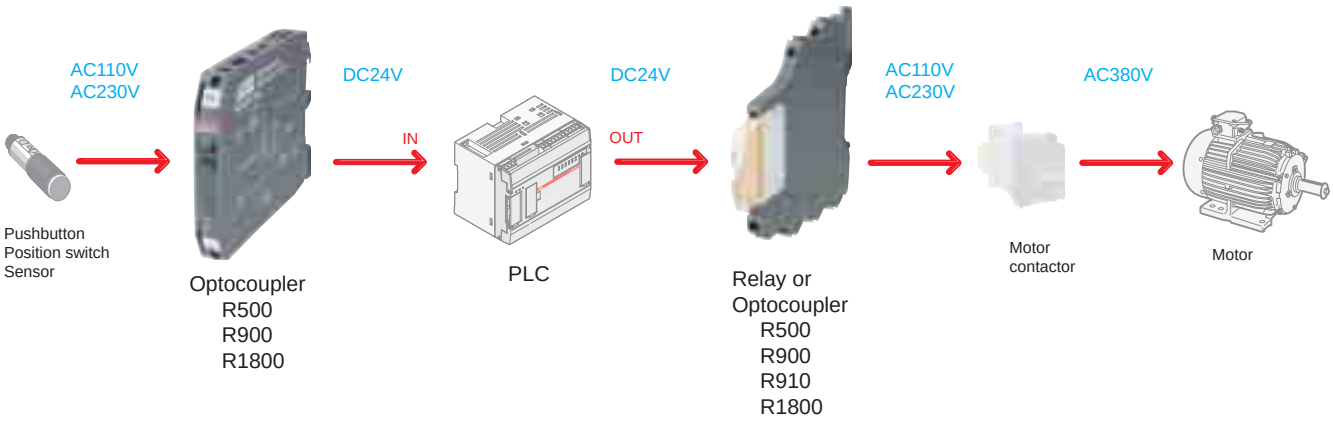
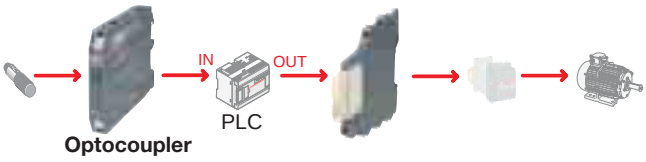
Relay Interfaces
Optocoupler modules
Applications

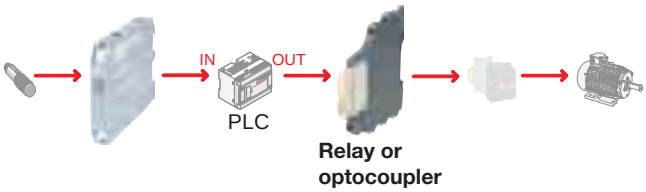
All the electrical signals from/to sensors/actuators must be adapted to the PLC's electrical level.
It is the first function of the relay or optocoupler interfaces.
Secund function of the relay and optocoupler interfaces is electrical isolation between sensors/actuators and the PLC.



An **optocoupler** is used as input interface. It is a function of insulation and adaptation.



A **relay** is used as output interface. It is voltage adaptation and it allows more power. The **power optocoupler** is used when the number of operations is important.



Relay Interfaces
Optocoupler modules
Technical data

R910 series

It is a terminal block !

- Spacing : 9 mm
- High wiring capacity 4 mm²
- 1 N/O contact 10 mA to 5 A / 250 V
- High isolation 3 kV

R500 series

The relay is pluggable

- Spacing : 5.08 mm (smallest on the market)
- Wire size : 2.5 mm² (4 mm² solid)
- 1 SPDT contact 10 mA to 6 A / 250 VA
- Transistor : 330 mA to 100 mA
  MOS : 1 A to 2 A
  Triac : 1 A

R900 series

It is the standard enclosure

- Spacing : 9 to 15 mm
- Wire size : 2.5 mm² (4 mm² solid)
- 1 or 2 SPDT contacts 1 mA to 6 A / 250 V
- Transistor : 100 mA to 5 A
  MOS : 5 A
  Triac : 1 A to 5 A

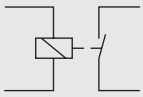
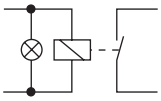
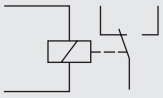
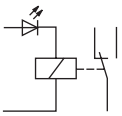
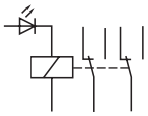
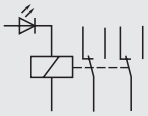
R1800 series

It is a compact enclosure (small height)

- Spacing : 18 to 23 mm
- Wire size : 2.5 mm² (4 mm² solid)
- 1 or 2 SPDT contacts 10^{-7} A to 6 A / 250 V
- Transistor : 100 mA

See cross reference table old part numbers / new part numbers at the end of the relay section.

Selection guide
Relay modules

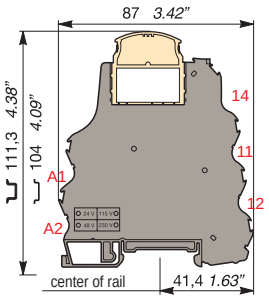
Contact \ Coil	12 V DC	24 V DC	24 V AC/DC	48 V DC
1 NO without LED 	spacing : 9 mm **M 4/9.R111 12 V DC** **607 029** R0100	spacing : 9 mm **M 4/9.R111 24 V DC** 1SNA **607 030** R0600		
1 NO with lamp 	spacing : 9 mm **M 4/9.R111L 12 V DC** 1SNA **607 001** R0600	spacing : 9 mm **M 4/9.R111L 24 V DC** 1SNA **607 002** R0700		
1 SPDT without LED 		spacing : 5.08 mm **D 2,5/5-R121 24 V DC** 1SNA **607 217** R0200		
1 SPDT with LED 	spacing : 11.5 mm **RB 121 12 V DC** 1SNA **630 001** R0000 spacing : 18 mm **RB 121 A 12 V DC** 1SNA **610 125** R2400	spacing : 5.08 mm **D 2,5/5-R121L 24 V DC** 1SNA **607 201** R1300	spacing : 5.08 mm **D 2,5/5-R121AL 24 V AC/DC** 1SNA **607 231** R0000 spacing : 11.5 mm **RB 121 A 24 V AC/DC** 1SNA **630 002** R0100 spacing : 18 mm **RB 121 A 24 V AC/DC** 1SNA **610 004** R0700	
1 SPDT with LED + switch			spacing : 11.5 mm **RB 121 AI 24 V AC/DC** 1SNA **630 007** R0600	
1 DPDT with LED 		spacing : 15 mm **RB 122 24 V DC** 1SNA **630 019** R0100	spacing : 18 mm **RB 122 AV 24 V AC/DC** 1SNA **610 121** R2000	
1 DPDT with LED very low level 		spacing : 18 mm **RB 122 24 V DC** 1SNA **610 059** R1500	spacing : 11,5 mm **RB 122 A 24 V AC/DC** 1SNA **630 011** R2100	spacing : 18 mm **RB 122 48 V DC** 1SNA **610 060** R1200

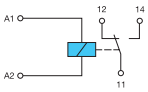
Selection guide
Relay modules

48 V AC/DC	110 V AC/DC	110 V AC 50 Hz	115 V AC 60 Hz	230 V AC 230 V AC/DC
spacing : 5.08 mm **D 2,5/5-R121AL** **48 V AC/DC** 1SNA **607 232** R0100		spacing : 5.08 mm **D 2,5/5-R121BL** **110 V AC** 1SNA **607 264** R1100	spacing : 5.08 mm **D 2,5/5-R121BL** **115 V AC** 1SNA **607 264** R1100	spacing : 5.08 mm **D 2,5/5-R121BL** **230 V AC** 1SNA **607 265** R1200
spacing : 11.5 mm **RB 121 A 48 V AC/DC** 1SNA **630 003** R0200		spacing : 11.5 mm **RB 121 B 110 V AC** 1SNA **630 004** R0300	spacing : 11.5 mm **RB 121 B 115 V AC** 1SNA **630 005** R0400	spacing : 11.5 mm **RB 121 B 230 V AC** 1SNA **630 006** R0500
spacing : 18 mm **RB 121 AV 48 V AC/DC** 1SNA **610 006** R0100	spacing : 18 mm **RB 121 A** **110 V AC/DC** 1SNA **610 132** R2300			spacing : 18 mm **RB 121 A** **230 V AC/DC** 1SNA **610 132** R2300
		spacing : 15 mm **RB 122 B 110 V AC** 1SNA **630 021** R2300	spacing : 15 mm **RB 122 B 115 V AC** 1SNA **630 022** R2400	
spacing : 18 mm **RB 122 AV 48 V AC/DC** 1SNA **610 122** R2100	spacing : 23 mm **RB 122 AR** **110 V AC/DC** 1SNA **610 011** R2500			spacing : 23 mm **RB 122 A** **230 V AC/DC** 1SNA **610 123** R2200
		spacing : 23 mm **RB 122 BR 110 V AC** 1SNA **610 115** R2200		spacing : 23 mm **RB 122 BR 230 V AC** 1SNA **610 089** R0400

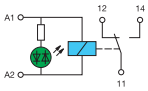
Relay Interfaces

R500 pluggable relay modules ⊔ DIN 3

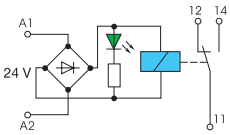




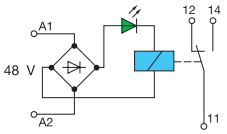
D 2,5/5-R121



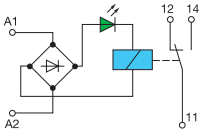
D 2,5/5-R121L



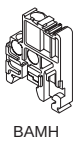
D 2,5/5-R121AL-24V



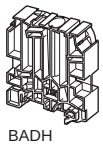
D 2,5/5-R121AL-48V



D 2,5/5-R121BL

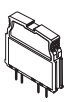


BAMH

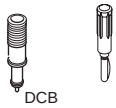


BADH

PCMS



BNMS R24V-1



DCB

FC2

D 2,5/5-R121... - 2.5 mm² blocks - 5.08 mm .200" spacing

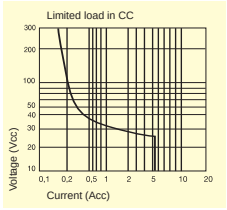
Characteristics

Relay characteristics	D 2,5/5-R121	D 2,5/5-R121L	D 2,5/5-R121AL				D 2,5/5-R121BL	
COIL								
Rated voltage +20%, -15%	24 V DC	24 V DC	24 V AC	24 V DC	48 V AC	48 V DC	110 V AC	230 V AC
Power	0.17 W	0.3 W	0.35 VA	0.35 W	0.44 VA	0.47 W	1.08 VA	2.13 VA
Rated current	7 mA	12 mA	12.4 mA	10 mA	7.6 mA	6.8 mA	8.4 mA	8 mA
Drop-out voltage	2.4 V	2.4 V	4.8 V	4.8 V	10 V	10 V	25 V	45 V
Status device		green LED						
CONTACT								
Type	1 SPDT							
Voltage switching range min./max.	12 V / 250 V AC							
Current switching range min./max.	10 mA / 6 A							
Load switching range								
AC1 min. / max.	0.6 VA / 1500 VA (ohmic load)							
DC1 min. / DC13 max.	0.6 W / 140 W							
Number of on-load operations	10^5 in AC15							
Number of off-load operations	10 x 10^6							
Pull-in time (delay time)	5 ms	5 ms						
Drop-out time (delay time)	8 ms	8 ms						
Bounce time	1.5 ms							
Insulation coil / contacts	4000 V RMS							
Breakdown voltage coil / contacts	4000 V RMS							
Insulation contacts/contacts	1000 V RMS							
Storage ambient temperature	- 40°C to + 80°C							
Operating ambient temperature	See derating curve							

Other characteristics

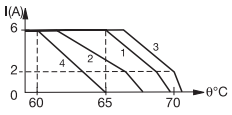
Body material	grey □	UL 94 V0
Wire size	Solid wire	0.2-4 mm² / 24-12 AWG
	Stranded wire	0.22-2.5 mm² / 24-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		10 mm .394"
Recommended screwdriver		3.5 mm .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curves



AC15	DC13	AC12	DC12	
A3	A1	A 6	A 6	V 24
A 3	A 0,2	A 6	A 0,3	V 110/120
A 3	A 0,1	A 6	A 0,2	V 220/230

D 2,5/5-R121...L



D 2,5/5-R121

1 : 24 V
2 : 48 V
3 : 110 V
4 : 230 V

Order codes

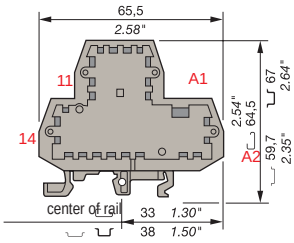
Description	Type	Order P/N	Packaging	Weight kg
Relay module 24 V DC	D 2,5/5-R121 24 V DC	1SNA **607 217** R0200	10	0.032
Relay module with LED 24 V DC	D 2,5/5-R121L 24 V DC	1SNA **607 201** R1300	10	0.032
Relay module with LED 24 V AC/DC	D 2,5/5-R121AL 24 V AC/DC	1SNA **607 231** R0000	10	0.04
Relay module with LED 48 V AC/DC	D 2,5/5-R121AL 48 V AC/DC	1SNA **607 232** R0100	10	0.04
Relay module with LED 110 V AC	D 2,5/5-R121BL 110 V AC	1SNA **607 264** R1100	10	0.04
Relay module with LED 230 V AC	D 2,5/5-R121BL 230 V AC	1SNA **607 265** R1200	10	0.04

Accessories

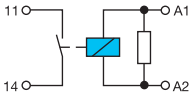
High end stop	BAMH 9,1 mm	1SNA **114 836** R0000	50
	BAMH V0 9,1 mm	1SNA **194 836** R0100	50
	BADH 12 mm	1SNA **116 900** R2700	50
Comb type jumper bar 2 to 22 poles	PCMS V0	see accessories	
Plug	BNMS R24V-1	1SNA **031 820** R1400	4
Test device blue □	DCB (1)	1SNA **105 028** R2100	10
Test plug DIA. 2 mm	FC2	1SNA **007 865** R2600	10
Marking method	(16) RC55	see markers	

(1) Only on top decks.

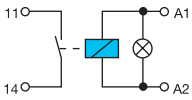
M 4/9.R111... - 2.5 mm² blocks - 9 mm .354" spacing



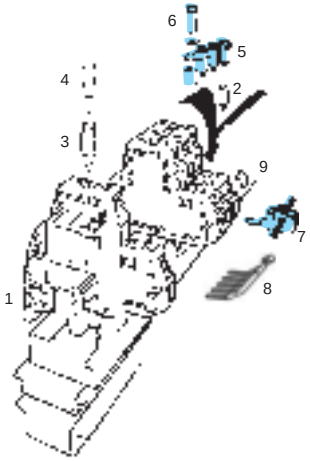
...M 4/9.R111



M 4/9.R111



M 4/9.R111L



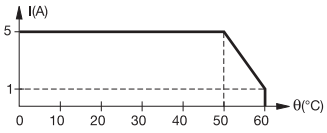
Characteristics

Relay characteristics	M 4/9.R111		M 4/9.R111L	
COIL				
Rated voltage +20%, -20% on DC	12 V	24 V	12 V	24 V
Power	0.3 W	0.3 W	0.6 W	0.8 W
Rated current	24 mA	14 mA	52 mA	33 mA
Drop-out voltage	1.2 V DC	2.4 V DC	1.2 V	2.4 V
Status device			lamp	
CONTACT				
Type	1 NO			
Voltage switching range min./max.	12 V / 150 V DC - 250 V AC			
Current switching range	10 mA / 5 A			
Load switching range				
AC1 min. / max.	0.6 VA / 1250 VA			
DC1 min. / max.	0.6 W / 150 W			
Number of on-load operations	1×10^6			
Number of off-load operations	2×10^7			
Pull-in time (delay time)	5 ms			
Drop-out time (delay time)	6 ms		7 ms	
Bounce time	4 ms			
Insulation coil / contacts	3000 V RMS			
Breakdown voltage with 1.2/50µ wave	4000 V RMS			
Insulation contacts/contacts	750 V RMS			
Storage ambient temperature	-40°C to +80°C			
Operating ambient temperature	See derating curve hereunder			

Other characteristics

Body material	grey □	UL 94 V0
Wire size	Solid wire	0.2-4 mm² / 22-12 AWG
	Stranded wire	0.22-2.5 mm² / 22-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		9 mm .354"
Recommended screwdriver		3.5 mm .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curve



M 4/9.R111...

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Relay module 12 V DC	M 4/9.R111	12 V DC	1SNA **607 029** R0100	10	0.02
Relay module 24 V DC	M 4/9.R111	24 V DC	1SNA **607 030** R0600	10	0.02
Relay module with lamp 12 V DC	M 4/9.R111L	12 V DC	1SNA **607 001** R0600	10	0.02
Relay module with lamp 24 V DC	M 4/9.R111L	24 V DC	1SNA **607 002** R0700	10	0.02

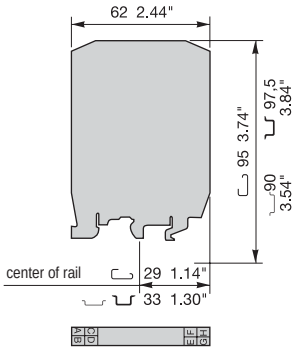
Accessories

1 High end stop (all rails)		BAMH 9,1 mm	1SNA **114 836** R0000	50
2 Test socket	DIA. 2 mm	AL2 (1)	1SNA **163 070** R0000	50
	DIA. 3 mm	AL3 (1)	1SNA **163 261** R0000	50
3 Test device	grey □	DCG	1SNA **163 218** R0500	10
4 Test plug		FC2	1SNA **007 865** R2600	10
5 Jumper bar	8 poles	BJS9 (1)(2)	1SNA **177 583** R1200	
not assembled	16 poles	BJS9 (1)(2)	1SNA **177 584** R1300	
6 Sub-assembly for jumper bar (screw + jumper + post)		EV6D (1)(2)	1SNA **168 400** R1600	20
7 IDC jumper		AD2,5	1SNA **114 205** R2000	50
8 Comb type jumper bar		PC9	1SNA **210 160** R1200	10
9 Marking method		(11) RC65 and RC610	see markers	

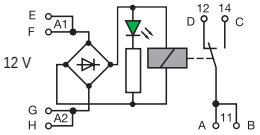
(1) These accessories can be used on the lower connection only.
(2) Use of these accessories requires the user to cut out the precut partition.

Relay Interfaces

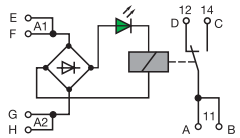
Relay modules R900 ⊂⊃ ⊔⊓ DIN 1-3



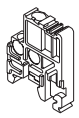
Relay blocks R900



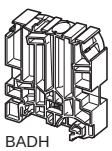
RB 121



RB 121 A



BAMH



BADH

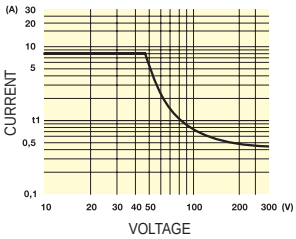
RLV

RB 121 A - instant relay blocks - 11.5 mm .453" spacing

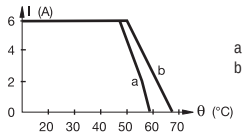
Characteristics

Relay characteristics	RB 121 - 12 V	RB 121 A - 24 V		RB 121 A - 48 V	
COIL					
Rated voltage +20%, -15% on DC, ±15% on AC	12 V DC	24 V AC	24 V DC	48 V AC	48 V DC
Power	0.5 W	0.52 VA	0.44 W	0.62 VA	0.48 W
Rated current	42 mA	22 mA	18 mA	13 mA	10 mA
Drop-out voltage at 20°C	2.8 V	4.6 V	4.6 V	5.8 V	5.8 V
Drop-in voltage at 20°C	7.5 V	12 V AC	14 V DC	26 V AC	30 V DC
Permissible leakage current	3.5 mA	2.2 mA	1.8 mA	1 mA	1 mA
CONTACT					
Type	1 SPDT				
Voltage switching range min./max.	5 V / 150 V DC - 250 V AC				
Current switching range min./max.	1 mA / 6 A				
Load switching range					
AC1 min. / max.	5 mVA / 1500 VA				
DC1 min. / max.	5 mW / 192 W				
Number of on-load operations	1×10^5				
Number of off-load operations	5×10^6				
Operating speed F	5 ms				
O	11 ms			12 ms	
Bounce	1 ms				
Insulation coil / contact	3500 V RMS				
Resistance to shock coil / contact	4000 V RMS				
Insulation contact / contact	1000 V RMS				
Ambient temperature storage	-40°C to +80°C				
operating	See derating curve				

Other characteristics	
Body material grey ☐	UL 94 V0
Wire Solid wire	0.5 - 4 mm² / 20 - 12 AWG
size Stranded wire	0.5 - 2.5 mm² / 20 - 12 AWG
Rated wire size	2.5 mm² / 12 AWG
Wire stripping length	7 mm .276"
Recommended screwdriver	3.5 mm .137"
Protection	IP20 NEMA1
Recommended torque	0.4 - 0.6 Nm 3.5 - 5.3 lb.in
Approvals	



Derating curve



a : horizontal position
b : vertical position

RB 121...

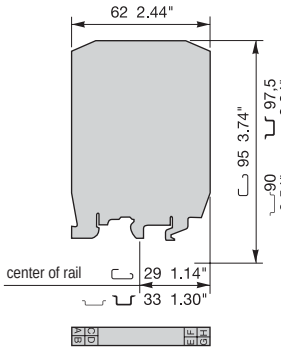
Order codes

Description	Type		Order P/N	Packaging	Weight kg
Relay module 12 V DC	RB 121	12 V DC	1SNA **630 001** R0000	1	0.04
Relay module 24 V AC/DC	RB 121 A	24 V AC/DC	1SNA **630 002** R0100	1	0.04
Relay module 48 V AC/DC	RB 121 A	48 V AC/DC	1SNA **630 003** R0200	1	0.04

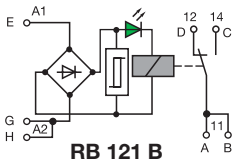
Accessories

High end section	BADH	1SNA **116 900** R2700	50
	BAMH	1SNA **114 836** R0000	50
	BAMH V0	1SNA **194 836** R0100	50
Lengthwise marker	RLV	1SNA **103 849** R0300	
Marking method	RC55	see markers	

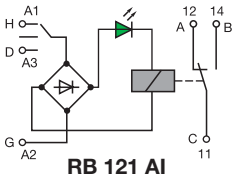
RB 121... - instant relay blocks - 11.5 mm .453" spacing



Relay blocks R900



RB 121 B

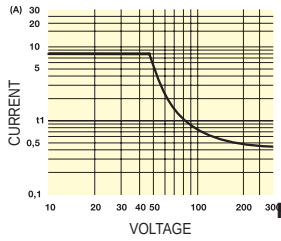


RB 121 AI

Characteristics

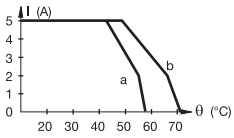
Relay characteristics	RB 121 B			RB 121 AI	
COIL					
Rated voltage +20%, -15% on DC, ±15% on AC	110 V AC/50 Hz	115 V AC/60 Hz	230 V AC	24 V AC ±10%	24 V DC ±10%
Power	1.5 VA	1.6 VA	3.22 VA	0.53 VA	0.44 W
Rated current	14 mA	14 mA	14 mA	22 mA	18 mA
Drop-out voltage at 20°C	30 V AC	30 V AC	60 V AC	5.5 V	4.6 V
Drop-in voltage at 20°C	60 V AC	60 V AC	120 V AC	12.5 V AC	14.5 V DC
Permissible leakage current	2 mA max.	2 mA max.	3.6 mA max.	2.2 mA	1.8 mA
CONTACT					
Type	1 SPDT				
Voltage switching range min./max.	5 V / 150 V DC - 250 V AC				
Current switching range min./max.	1 mA / 5 A				1 mA / 6 A
Load switching range					
AC1 min. / max.	5 mVA / 1250 VA				5 mVA / 1500 VA
DC1 min. / max.	5 mW / 192 W				
Number of on-load operations	1×10^5				
Number of off-load operations	5×10^6				
Operating speed F	5 ms				
O	10 ms				11 ms
Bounce	1 ms				
Insulation coil / contact	3000 V RMS				
Resistance to shock coil / contact	4000 V RMS				
Insulation contact / contact	1000 V RMS				
Ambient temperature storage	-40°C to +80°C				
operating	see derating curves				

Other characteristics		
Body material	grey ☐	UL 94 V0
Wire	Solid wire	0.5 - 4 mm² / 20 - 12 AWG
size	Stranded wire	0.5 - 2.5 mm² / 20 - 12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 mm .137"
Protection		IP20 NEMA1
Recommended torque		0.4 - 0.6 Nm 3.5 - 5.3 lb.in
Approvals		

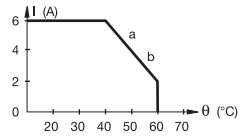


RB 121 B

Derating curves



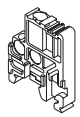
a : horizontal position
b : vertical position



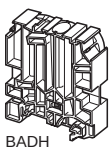
RB 121 AI

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Relay module 110 V AC 50 Hz	RB 121 B	110 V AC	1SNA **630 004** R**0300**	1	0.05
Relay module 115 V AC 60 Hz	RB 121 B	115 V AC	1SNA **630 005** R**0400**	1	0.05
Relay module 230 V AC 50 Hz	RB 121 B	230 V AC	1SNA **630 006** R**0500**	1	0.05
Relay module 24 V AC/DC	RB 121 AI	24 V AC/DC	1SNA **630 007** R**0600**	1	0.05



BAMH



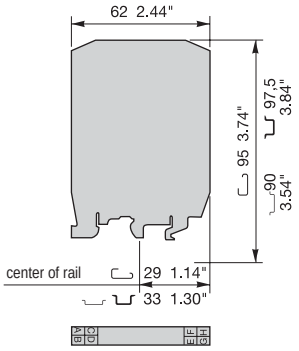
BADH

RLV

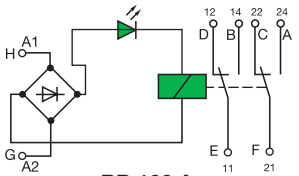
Accessories

High end section	BADH	1SNA **116 900** R**2700**	50
	BAMH	1SNA **114 836** R**0000**	50
	BAMH V0	1SNA **194 836** R**0100**	50
Lengthwise marker	RLV	1SNA **103 849** R**0300**	
Marking method	RC55	see markers	

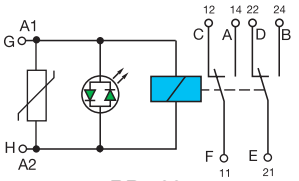
Optocouplers



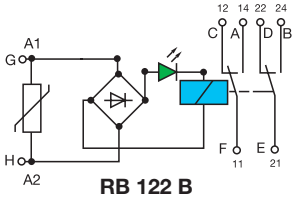
Relay blocks R900



RB 122 A

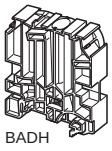


RB 122



RB 122 B

BAMH



BADH

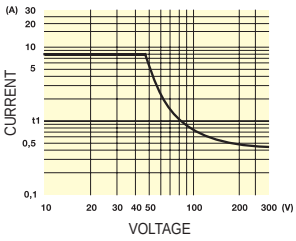
RLV

RB 122... - instant relay blocks - 11.5 mm .453" or 15 mm .591" spacing

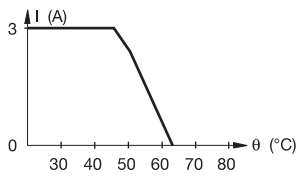
Characteristics

Relay characteristics	RB 122 A		RB 122	RB 122 B	
COIL					
Rated voltage +15%, -10% on DC ±15% on AC	24 V AC	24 V DC	24 V DC	110 V AC/50Hz	115 V AC/60Hz
Power	0.4 VA	0.35 W	0.48 W	3.6 VA	4 VA
Rated current	16.8 mA	14.4 mA	20 mA	33 mA	35 mA
Drop-out voltage at 20°C	9.2 V	6.5 V	2.4 V DC	11 V AC	11.5 V AC
Drop-in voltage at 20°C					
Permissible leakage current	2 mA max.	2 mA max.	1.5 mA	2 mA	2.6 mA
CONTACT					
Type	1 DPDT				
Voltage switching range min./max.	10^{-5} V / 250 V AC		12 V / 250 V		
Current switching range min./max.	10^{-5} A / 3 A		100 mA / 7 A	100 mA / 7 A	100 mA / 7 A
Load switching range AC1 min. / max.	10^{-10} VA / 250 VA		1.2 VA / 1750 VA	1.2 VA / 1750 VA	1.2 VA / 1750 VA
DC1 min. / max.	10^{-10} W / 90 W		1.2 W / see curve hereunder		
Number of on-load operations	1.8 x 10^6 (2 A / 60 W)				
Number of off-load operations	10^8		30 x 10^6		
Operating speed F	6 ms		8 ms	6 ms	
O	11 ms		15 ms	12 ms	
Bounce	1 ms		2 ms		
Insulation coil / contact	1500 V RMS		2500 V RMS		
Resistance to shock coil / contact	4000 V RMS				
Insulation contact / contact	1000 V RMS				
Ambient temperature storage	-40°C to +80°C				
operating	see derating curves				

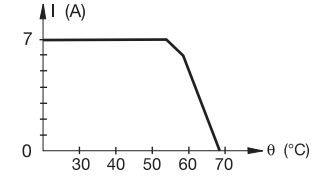
Other characteristics	
Body material grey □	UL 94 V0
Wire Solid wire	0.5 - 4 mm² / 20 - 12 AWG
size Stranded wire	0.5 - 2.5 mm² / 20 - 12 AWG
Rated wire size	2.5 mm² / 12 AWG
Wire stripping length	7 mm .276"
Recommended screwdriver	3.5 mm .137"
Protection	IP20 NEMA1
Recommended torque	0.4 - 0.6 Nm 3.5 - 5.3 lb.in
Approvals	



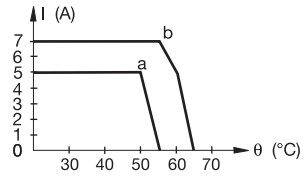
Derating curves



RB 122 A



RB 122



RB 122 B

a : 110 V AC/50 Hz block
b : 115 V AC/60 Hz block

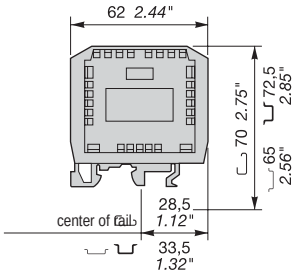
Order codes

Description	Type		Order P/N	Packaging	Weight kg
Relay block 24 V AC/ DC 11.5 mm spacing	RB 122 A	24 V AC/DC	1SNA **630 011** R2100	1	0.05
Relay block 24 VDC 15 mm spacing	RB 122	24 V DC	1SNA **630 019** R0100	1	0.05
Relay block 110 V AC/50 Hz 15 mm spacing	RB 122 B	110 VAC/50Hz	1SNA **630 021** R2300	1	0.06
Relay block 115 V AC/60 Hz 15 mm spacing	RB 122 B	115 VAC/60Hz	1SNA **630 022** R2400	1	0.06

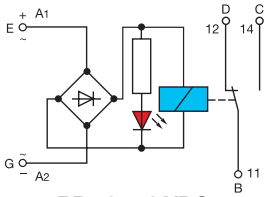
Accessories

High end section	BADH	1SNA **116 900** R2700	50
	BAMH	1SNA **114 836** R0000	50
	BAMH V0	1SNA **194 836** R0100	50
Lengthwise marker	RLV	1SNA **103 849** R0300	
Marking method	RC55	see markers	

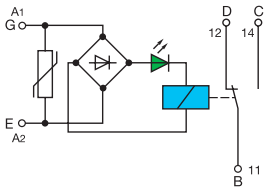
RB 121... - instant relay blocks - 18 mm .709" spacing



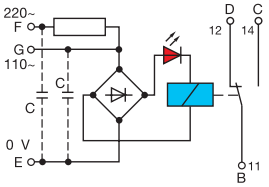
Relay blocks R1800



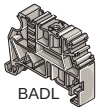
RB 121 12 VDC
RB 121 A 24 VAC/DC



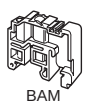
RB 121 AV 48 VAC/DC



220 VAC/DC-RB 121 A 110



BADL



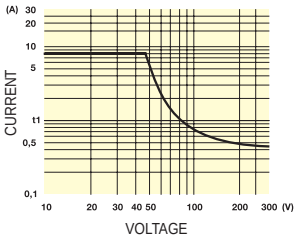
BAM

RLV

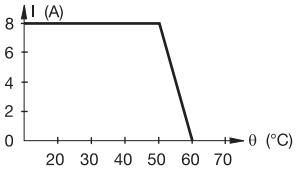
Characteristics

Relay characteristics	RB 121	RB 121 A	RB 121 AV	RB 121 A	
COIL					
Rated voltage +15%, -10% on DC ±15% on AC	12 V DC	24 V AC/DC	48 V AC/DC	110 V AC/DC	220 V AC/DC
Power	0.5 W	0.7 W	0.96 W	0.5 W	1.1 VA
Rated current	41 mA	29 mA	20 mA	4.3 mA	5 mA
Drop-out voltage at 20°C	3.2 V DC	5 V AC/DC	5.6 V AC/DC	14.5 V AC/DC	25.2 V AC
Drop-in voltage at 20°C					
Permissible leakage current					
CONTACT					
Type	1 SPDT				
Voltage switching range min./max.	12 V / 380 V				
Current switching range min./max.	10 mA / 8 A				
Load switching range					
AC1 min. / max.	0.6 VA / 2000 VA				
DC1 min. / max.	1.2 W / see curve below				
Number of on-load operations	2×10^5				
Number of off-load operations	2×10^7				
Operating speed F	7 ms				
O	6 ms				
Bounce	2 ms				
Insulation coil / contact	2500 V RMS				
Resistance to shock coil / contact	4000 V RMS				
Insulation contact / contact	1000 V RMS				
Ambient temperature storage	-40°C to +80°C				
operating	see derating curves				

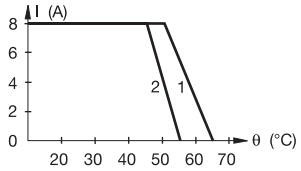
Other characteristics	
Body material grey ☐	UL 94 V0
Wire Solid wire	0.2 - 4 mm² / 22 - 12 AWG
size Stranded wire	0.22 - 2.5 mm² / 22 - 12 AWG
Rated wire size	2.5 mm² / 12 AWG
Wire stripping length	7 mm .276"
Recommended screwdriver	3.5 mm .137"
Protection	IP20 NEMA1
Recommended torque	0.4 - 0.6 Nm 3.5 - 5.3 lb.in
Approvals	



Derating curves



RB 121 12 VDC
RB 121 A 24 VAC/DC
RB 121 AV 48 VAC/DC



RB 121 A 110-220 VAC/DC

1 : 110 V AC/DC block
2 : 220 V AC block

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Relay block 12 V DC	RB 121	12 V DC	1SNA **610 125** R2400	1	0.05
Relay block 24 V AC/DC	RB 121 A	24 V AC/DC	1SNA **610 004** R0700	1	0.05
Relay block 48 VAC/DC	RB 121 AV	48 V AC/DC	1SNA **610 006** R0100	1	0.05
Relay block 110-220 V AC/DC	RB 121 A	110-220 V AC/DC	1SNA **610 132** R2300	1	0.05

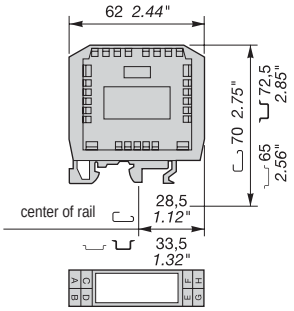
Accessories

End section	BADL V0	1SNA **399 903** R0200	50
	BAM	1SNA **103 002** R2600	50
	BAM V0	1SNA **399 306** R0300	50
Lengthwise marker	RLV	1SNA **103 849** R0300	
Marking method	⑤ RC55	see markers	

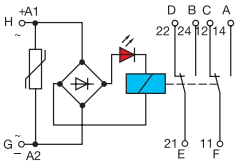
Relay Interfaces

Relay modules R1800 ⌙⌡ DIN 1-3

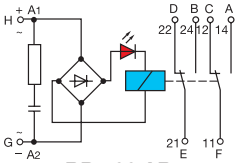
RB 122... - instant relay blocks - 18 mm .709" or 23 mm .906" spacing



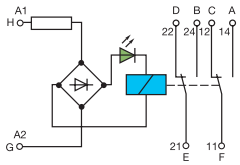
Relay blocks R1800



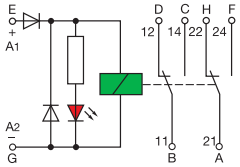
RB 122 AV



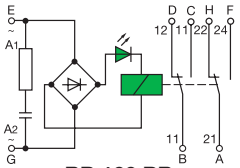
RB 122 AR



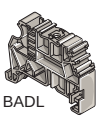
RB 122 A



RB 122



RB 122 BR



BADL

RLV

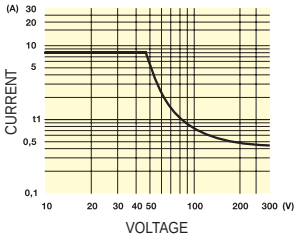
BAM

Characteristics

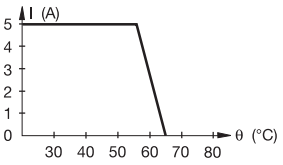
Relay characteristics	RB 122 AV		RB 122 AR	RB 122 A	RB 122		RB 122 BR	
COIL								
Rated voltage +15%, -10% on DC ±15% on AC	24 VAC/DC	48 VAC/DC	110 VAC/DC	220 VAC/DC	24 V DC	48 V DC	110 V AC	220 V AC
Power	0.7 W	0.7 W	0.7 W - 1.8 VA	1.2 W	0.31 W	0.48 W	4.8 VA	1.1 VA
Rated current	26 mA	14 mA	16 mA	5.5 mA	13 mA	10 mA	45 mA	5.1 mA
Drop-out voltage at 20°C	2.4 V AC/DC	4.8 V AC/DC	11 V AC/DC	22 V AC/DC	2.4 V DC	4.8 V DC	11 V AC	22 V AC
Drop-in voltage at 20°C								
Permissible leakage current			1.6 mA				3 mA	
CONTACT								
Type	1 DPDT							
Voltage switching range min./max.	12 V / 250 V		10^{-3} V / 250 V	12 V / 250 V			10^{-3} V / 250 V	
Current switching range min./max.	10 mA / 5 A						10^{-7} A / 5 A	
Load switching range								
AC1 min. / max.	0.6 VA / 1250 VA						10^{-10} VA / 1000 VA	
DC1 min. / max.	0.6 W / see curve hereunder						10^{-10} W / see curve hereunder	
Number of on-load operations	2×10^5						5A/100W - 5A/1kVA : 10^5	
Number of off-load operations	2×10^7						2×10^8	
Operating speed F	7 ms						8 ms	
O	4 ms						3 ms	
Bounce	3 ms						0.5 ms	
Insulation coil / contact	2000 V RMS						1500 V RMS	
Resistance to shock coil / contact	4000 V RMS						4000 V RMS	
Insulation contact / contact	1500 V RMS						2000 V RMS	
Ambient temperature storage	-40°C to +80°C							
operating	see derating curves							

Other characteristics

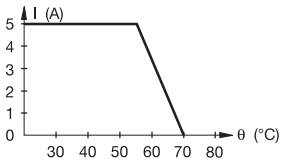
Body material grey ☐	UL 94 V0
Wire Solid wire	0.2 - 4 mm² / 22 - 12 AWG
size Stranded wire	0.22 - 2.5 mm² / 22 - 12 AWG
Rated wire size	2.5 mm² / 12 AWG
Wire stripping length	7 mm .276"
Recommended screwdriver	3.5 mm .137"
Protection	IP20 NEMA1
Recommended torque	0.4 - 0.6 Nm 3.5 - 5.3 lb.in
Approvals	



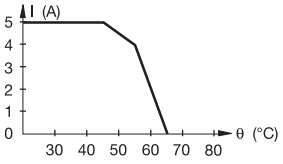
Derating curves



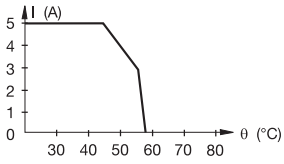
RB 122 A



RB 122 AV - RB 122 AR
2 loaded contacts



RB 122
2 loaded contacts



RB 122 BR
horizontal position, 2 loaded contacts

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Relay module 24 V AC/DC 18 mm spacing	RB 122 AV	24 V AC/DC	1SNA **610 121** R2000	1	0.05
Relay module 48 VAC/DC 18 mm spacing	RB 122 AV	48 V AC/DC	1SNA **610 122** R2100	1	0.05
Relay module 110 V AC/DC 23 mm spacing	RB 122 AR	110 V AC/DC	1SNA **610 011** R2500	1	0.05
Relay module 220 V AC/DC 23 mm spacing	RB 122 A	220 V AC/DC	1SNA **610 123** R2200	1	0.05
Relay module 24 V DC 18 mm spacing	RB 122	24 V DC	1SNA **610 059** R1500	1	0.05
Relay module 48 V DC 18 mm spacing	RB 122	48 V DC	1SNA **610 060** R1200	1	0.05
Relay module 110 V AC 23 mm spacing	RB 122 BR	110 V AC	1SNA **610 115** R2200	1	0.05
Relay module 220 V AC 23 mm spacing	RB 122 BR	220 V AC	1SNA **610 089** R0400	1	0.05

Accessories

End section	BADL V0		1SNA **399 903** R0200	50
	BAM		1SNA **103 002** R2600	50
	BAM V0		1SNA **399 306** R0300	50
Lengthwise marker	RLV		1SNA **103 849** R0300	
Marking method	⑤	RC55	see markers	

Cross reference

Relays

R500

Type	New part numbers	Old part numbers
D 2,5/5 R121 24 VDC	1SNA **607 217** R0200	1SNA **007 217** R2400
D 2,5/5 R121L 24 VDC	1SNA **607 201** R1300	1SNA **007 201** R0500
D 2,5/5 R121AL 24 VAC/DC	1SNA **607 231** R0000	
D 2,5/5 R121AL 48 VAC/DC	1SNA **607 232** R0100	
D 2,5/5 R121BL 110 VAC	1SNA **607 264** R1100	
D 2,5/5 R121BL 230 VAC	1SNA **607 265** R1200	

R910

Type	New part numbers	Old part numbers
M 4/9 R111 12 VDC	1SNA **607 029** R0100	1SNA **007 029** R2300
M 4/9 R111 24 VDC	1SNA **607 030** R0600	1SNA **007 030** R2000
M 4/9 R111L 12 VDC	1SNA **607 001** R0600	1SNA **007 001** R2000
M 4/9 R111L 24 VDC	1SNA **607 002** R0700	1SNA **007 002** R2100

R900

Type	New part numbers	Old part numbers
RB121 12 VDC	1SNA **630 001** R0000	1SNA **030 001** R2200
RB121A 24 VAC/DC	1SNA **630 002** R0100	1SNA **030 002** R2300
RB121A 48 VAC/DC	1SNA **630 003** R0200	1SNA **030 003** R2400
RB121B 110 VAC 50 Hz	1SNA **630 004** R0300	1SNA **030 004** R2500
RB121B 115 VAC 60 Hz	1SNA **630 005** R0400	1SNA **030 005** R2600
RB121B 230 VAC	1SNA **630 006** R0500	1SNA **030 006** R2700
RB121AI 24 VAC/DC	1SNA **630 007** R0600	1SNA **030 007** R2000
RB122A 24 VAC/DC	1SNA **630 019** R0100	1SNA **030 019** R2300
RB122B 110 VAC 50 Hz	1SNA **630 021** R2300	1SNA **030 021** R1500
RB122B 115 VAC 60 Hz	1SNA **630 022** R2400	1SNA **030 022** R1600
RB122A 24 VAC/DC	1SNA **630 011** R2100	1SNA **030 011** R1300

R1800

Type	New part numbers	Old part numbers
RB121A 12 VDC	1SNA **610 125** R2400	1SNA **010 125** R1600
RB121A 24 VAC/DC	1SNA **610 004** R0700	1SNA **010 004** R2100
RB121AV 48 VAC/DC	1SNA **610 006** R0100	1SNA **010 006** R2300
RB121A 110-230 VAC/DC	1SNA **610 132** R2300	1SNA **010 132** R1500
RB122AV 24 VAC/DC	1SNA **610 121** R2000	1SNA **010 121** R1200
RB122AV 48 VAC/DC	1SNA **610 122** R2100	1SNA **010 122** R1300
RB122AR 110 VAC/DC	1SNA **610 011** R2500	1SNA **010 011** R1700
RB122A 220 VAC	1SNA **610 123** R2200	1SNA **010 123** R1400
RB122 24 VDC	1SNA **610 059** R1500	1SNA **010 059** R0700
RB122 48 VDC	1SNA **610 060** R2000	1SNA **010 060** R0400
RB122BR 110 VAC	1SNA **610 115** R2200	1SNA **010 115** R1400
RB122BR 220 VAC	1SNA **610 089** R0400	1SNA **010 089** R2600

Optocouplers

R500

Type	New part numbers	Old part numbers
D 2,5/5-OBIC 0030 24 VDC	1SNA **607 210** R1700	1SNA **007 210** R0100
D 2,5/5-OBIA 0030 24 VAC	1SNA **607 211** R0400	1SNA **007 211** R2600
D 2,5/5-OBIC 0030 48 VDC	1SNA **607 212** R0500	1SNA **007 212** R2700
D 2,5/5-OBIA 0030 48 VAC	1SNA **607 213** R0600	1SNA **007 213** R2000
D 2,5/5-OBIA 0030 110 VAC	1SNA **607 214** R0700	1SNA **007 214** R2100
D 2,5/5-OBIA 0030 230 VAC	1SNA **607 215** R0000	1SNA **007 215** R2200
D 2,5/5-OBOC 0100 5 VDC	1SNA **607 203** R1500	1SNA **007 203** R0700
D 2,5/5-OBOC 0100 24 VDC	1SNA **607 204** R1600	1SNA **007 204** R0000
D 2,5/5-OBOC 0100 48 VDC	1SNA **607 205** R1700	1SNA **007 205** R0100
D 2,5/5-OBOC 1000 5 VDC	1SNA **607 206** R1000	1SNA **007 206** R0200
D 2,5/5-OBOC 1000 24 VDC	1SNA **607 207** R1100	1SNA **007 207** R0300
D 2,5/5-OBOC 1000 24 VAC/DC	1SNA **607 250** R2700	
D 2,5/5-OBOC 1000 48 VAC/DC	1SNA **607 251** R1400	
D 2,5/5-OBOC 1000 110 VAC	1SNA **607 270** R2300	
D 2,5/5-OBOC 1000 230 VAC	1SNA **607 271** R1000	
D 2,5/5-OBOC 2000 5 VDC	1SNA **607 208** R2200	1SNA **007 208** R1400
D 2,5/5-OBOC 2000 24 VDC	1SNA **607 209** R2300	1SNA **007 209** R1500
D 2,5/5-OBOC 2000 24 VAC/DC	1SNA **607 255** R1000	
D 2,5/5-OBOC 2000 48 VAC/DC	1SNA **607 256** R1100	
D 2,5/5-OBOC 2000 110 VAC	1SNA **607 272** R1100	
D 2,5/5-OBOC 2000 230 VAC	1SNA **607 273** R1200	
D 2,5/5-OBOA 1000 24 VDC	1SNA **607 238** R1700	
D 2,5/5-OBOA 1000 24 VAC/DC	1SNA **607 240** R2500	
D 2,5/5-OBOA 1000 48 VAC/DC	1SNA **607 241** R1200	
D 2,5/5-OBOA 1000 110 VAC	1SNA **607 268** R2500	
D 2,5/5-OBOA 1000 230 VAC	1SNA **607 269** R2600	

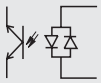
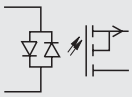
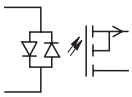
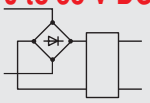
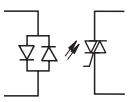
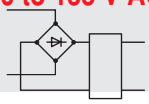
R900

Type	New part numbers	Old part numbers
OBC 0100 12 to 24 VDC	1SNA **608 017** R0600	1SNA **008 017** R2000
OBC 0100 48 VDC	1SNA **608 021** R0200	1SNA **008 021** R2400
OBC 0100 110 VAC	1SNA **608 024** R0500	1SNA **008 024** R2700
OBC 0100 230 VAC	1SNA **608 027** R2200	1SNA **008 027** R2200
OBC 1000 5 VDC	1SNA **608 014** R2200	1SNA **008 014** R2500
OBC 1000 12 to 24 VDC	1SNA **608 018** R1700	1SNA **008 018** R0100
OBC 1000 48 VDC	1SNA **608 022** R0300	1SNA **008 022** R2500
OBC 1000 110 VAC	1SNA **608 025** R0600	1SNA **008 025** R2000
OBC 1000 230 VAC	1SNA **608 028** R1100	1SNA **008 028** R0300
ORC 111 24 VDC	1SNA **608 068** R2100	1SNA **008 068** R1300
OBA 1000 5 VDC	1SNA **608 015** R0400	1SNA **008 015** R2600
OBA 0100 12 to 24 VDC	1SNA **608 019** R1000	1SNA **008 019** R2000
OBA 1000 48 VDC	1SNA **608 023** R0400	1SNA **008 023** R2600
OBA 1000 110 VAC	1SNA **608 026** R0700	1SNA **008 026** R2100
ORA 111 24 VDC	1SNA **608 069** R2200	1SNA **008 069** R1400

R1800

Type	New part numbers	Old part numbers
EBO3DC 5 to 48 VDC	1SNA **610 230** R1100	1SNA **010 230** R0300
EBO1 24 VAC/DC	1SNA **610 022** R2000	1SNA **010 022** R1200
EBO1 127 VAC/DC	1SNA **610 108** R1400	1SNA **010 108** R0600
EBO1 230 VAC/DC	1SNA **610 023** R2100	1SNA **010 023** R1300

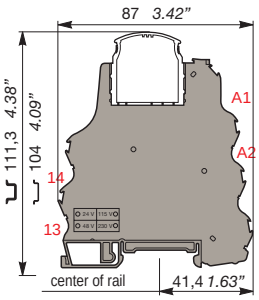
Selection guide
Optocoupler modules

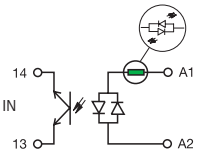
Output \ Input	5 V DC	12 V DC	24 V DC	24 V AC	24 V AC/DC
< 50 mA / 10 to 58 V DC 	spacing : 18 mm **EBO3DC 5 to 48 VDC** 1SNA **610 230** R1100	spacing : 18 mm **EBO3DC 5 to 48 VDC** 1SNA **610 230** R1100	spacing : 5.08 mm **D 2,5/5-OBIC 0030 24 VDC** 1SNA **607 210** R1700 spacing : 18 mm **EBO3DC 5 to 48 VDC** 1SNA **610 230** R1100	spacing : 5.08 mm **D 2,5/5-OBIA 0030 24 VAC** 1SNA **607 211** R0400	
100 mA / 10 to 58 V DC	spacing : 5.08 mm **D 2,5/5-OBOC 0100 5 VDC** 1SNA **607 203** R1500	spacing : 9 mm **OBC 0100 12 to 24 VDC** 1SNA **608 017** R0600	spacing : 5.08 mm **D 2,5/5-OBOC 0100 24 VDC** 1SNA **607 204** R1600 spacing : 9 mm **OBC 0100 12 to 24 VDC** 1SNA **608 017** R0600		spacing : 18 mm **EBO1 24 VAC/DC** 1SNA **610 022** R2000
1 A / 10 to 58 V DC 	spacing : 5.08 mm **D 2,5/5-OBOC 1000 5 VDC** 1SNA **607 206** R1000 spacing : 9 mm **OBC 1000 5 VDC** 1SNA **608 014** R2200	spacing : 9 mm **OBC 1000 12 to 24 VDC** 1SNA **608 018** R1700	spacing : 5.08 mm **D 2,5/5-OBOC 1000 24 VDC** 1SNA **607 207** R1100 spacing : 9 mm **OBC 1000 12 to 24 VDC** 1SNA **608 018** R1700		spacing : 5.08 mm **D 2,5/5-OBOC 1000 24 VAC/DC** 1SNA **607 250** R2700
2 A / 10 to 30 V DC 	spacing : 5.08 mm **D 2,5/5-OBOC 2000 5 VDC** 1SNA **607 208** R2200		spacing : 5.08 mm **D 2,5/5-OBOC 2000 24 VDC** 1SNA **607 209** R2300		spacing : 5.08 mm **D 2,5/5-OBOC 2000 24 VAC/DC** 1SNA **607 255** R1000
5 A / 10 to 58 V DC 			spacing : 9 mm **ORC 111 24 VDC** 1SNA **608 068** R2100		
1 A / 24 to 250 V AC 	spacing : 9 mm **OBA 1000 5 VDC** 1SNA **608 015** R0400	spacing : 9 mm **OBA 1000 12 à 24 VDC** 1SNA **608 019** R1000	spacing : 5.08 mm **D 2,5/5-OBOA 1000 24 VDC** 1SNA **607 238** R1700 spacing : 9 mm **OBA 1000 12 à 24 VDC** 1SNA **608 019** R1000		spacing : 5.08 mm **D 2,5/5-OBOA 1000 24 VAC/DC** 1SNA **607 240** R2500
5 A / 20 to 135 V AC 			spacing : 9 mm **ORA 111 24 VDC** 1SNA **608 069** R2200		

Selection guide
Optocoupler modules

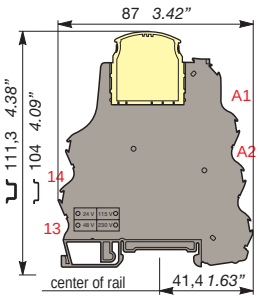
48 V DC	48 V AC	48 V AC/DC	110 V AC	127 V AC/DC	230 V AC	230 V AC/DC
spacing : 5.08 mm **D 2,5/5-OBIC 0030** **48 VDC** 1SNA **607 212** R0500 spacing : 18 mm **EBO3DC 5 to 48 VDC** 1SNA **610 230** R1100	spacing : 5.08 mm **D 2,5/5-OBIA 0030** **48 VAC** 1SNA **607 213** R0600 		spacing : 5.08 mm **D 2,5/5-OBIA 0030** **110 VAC** 1SNA **607 214** R0700 		spacing : 5.08 mm **D 2,5/5-OBIA 0030** **230 VAC** 1SNA **607 215** R0000 	
spacing : 5.08 mm **D 2,5/5-OBOC 0100** **48 VDC** 1SNA **607 205** R1700 spacing : 9 mm **OBC 0100 48 VDC** 1SNA **608 021** R0200			 spacing : 9 mm **OBC 0100 110 VAC** 1SNA **608 024** R0500	 spacing : 18 mm **EBO1 127 VAC/DC** 1SNA **610 108** R1400	 spacing : 9 mm **OBC 0100 230 VAC** 1SNA **608 027** R0000	 spacing : 18 mm **EBO1 220 VAC/DC** 1SNA **610 023** R2100
 spacing : 9 mm **OBC 1000 48 VDC** 1SNA **608 022** R0300		spacing : 5.08 mm **D 2,5/5-OBOC 1000** **48 VAC/DC** 1SNA **607 251** R1400 	spacing : 5.08 mm **D 2,5/5-OBOC 1000** **110 VAC** 1SNA **607 270** R2300 spacing : 9 mm **OBC 1000 110 VAC** 1SNA **608 025** R0600		spacing : 5.08 mm **D 2,5/5-OBOC 1000** **230 VAC** 1SNA **607 271** R1000 spacing : 9 mm **OBC 1000 230 VAC** 1SNA **608 028** R1100	
		spacing : 5.08 mm **D 2,5/5-OBOC 2000** **48 VAC/DC** 1SNA **607 256** R1100 	spacing : 5.08 mm **D 2,5/5-OBOC 2000** **110 VAC** 1SNA **607 272** R1100 		spacing : 5.08 mm **D 2,5/5-OBOC 2000** **230 VAC** 1SNA **607 273** R1200 	
		spacing : 5.08 mm **D 2,5/5-OBOA 1000** **48 VAC/DC** 1SNA **607 241** R1200 	spacing : 5.08 mm **D 2,5/5-OBOA 1000** **110 VAC** 1SNA **607 268** R2500 spacing : 9 mm **OBA 1000 110 VAC** 1SNA **608 026** R0700		spacing : 5.08 mm **D 2,5/5-OBOA 1000** **230 VAC** 1SNA **607 269** R2600 	
 spacing : 9 mm **OBA 1000 48 VDC** 1SNA **608 023** R0400						

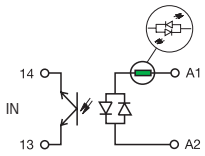
Optocouplers



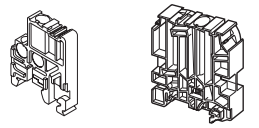


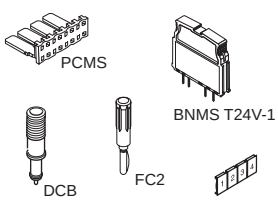
D 2,5/5-OBIC-0030





D 2,5/5-OBIA-0030





D 2,5/5-OBI...-0030 - 2.5 mm² blocks - 5.08 mm .200" spacing

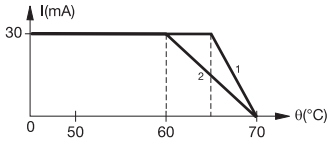
Characteristics

Opto. characteristics		D 2,5/5-OBIC-0030		D 2,5/5-OBIA-0030			
INPUT							
Input voltage		19.2 V to 27.6 V DC	38.4 V to 55.2 V DC	20.4 V to 26.4 V AC	40.8 V to 52.8 V AC	98 V to 126.5 V AC	195.5 V to 253 V AC
Input current		5 mA	4.1 mA	8.5 mA	4.5 mA	8 mA	7 mA
Pull-in voltage at Is=100%		12 V	21 V	13 V	22 V	50 V	95 V
Switching time C / O		20 µs / 1.3 ms	20 µs / 1.3 ms	6 ms / 10 ms	6 ms / 10 ms	6 ms / 10 ms	6 ms / 10 ms
Operating frequency		400 Hz	400 Hz	30 Hz	30 Hz	30 Hz	30 Hz
Permissible leakage current		1 mA	0.8 mA	1 mA	1 mA	2 mA	2 mA
OUTPUT							
Output voltage		4.5 V to 58 V DC					
Output current min.		0.5 mA					
Output current max.		30 mA					
Output leakage current at Umax.							
Residual voltage at I max and U rated	typical	2.3 V DC					
	max.	2.7 VDC					
Frequency on inductive load							
Isolation Input / Output		2500 V RMS					
TEMPERATURE							
Ambient temperature	storage	- 40°C to + 80°C					
	operating	See derating curve					

Other characteristics

Body material	grey ☐	UL 94 V0
Wire size	Solid wire	0.2-4 mm² / 24-12 AWG
	Stranded wire	0.22-2.5 mm² / 24-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		10 mm .394"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curve



1 : 24 V - 48 V
2 : 115 V - 230 V

D 2,5/5-OBI...-0030

Order codes

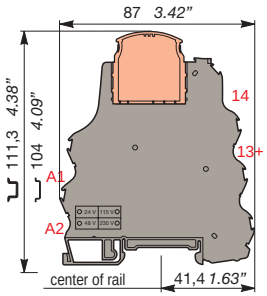
Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 24 V DC	D 2,5/5-OBIC-0030	24 V DC	1SNA **607 210** R1700	1	0.032
Optocoupler module 48 V DC	D 2,5/5-OBIC-0030	48 V DC	1SNA **607 211** R0400	1	0.032
Optocoupler module 24 V AC	D 2,5/5-OBIA-0030	24 V AC	1SNA **607 212** R0500	1	0.032
Optocoupler module 48 V AC	D 2,5/5-OBIA-0030	24 V AC	1SNA **607 213** R0600	1	0.032
Optocoupler module 115 V AC	D 2,5/5-OBIA-0030	115 V AC	1SNA **607 214** R0700	1	0.032
Optocoupler module 230 V AC	D 2,5/5-OBIA-0030	230 V AC	1SNA **607 215** R0000	1	0.032

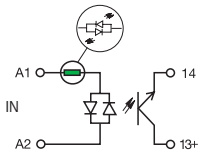
Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836** R0000	50
	BAMH V0	9,1 mm	1SNA **194 836** R0100	50
	BADH	12 mm	1SNA **116 900** R2700	50
Comb type jumper bar 2 to 22 poles	PCMS	V0	see accessories	
Plug OBIC 24 V white ☐	BNMS T24V-1		1SNA **031 800** R2100	4
Plug OBIC 48 V white ☐	BNMS T48V-1		1SNA **031 801** R1600	4
Plug OBIA 24 V yellow ☐	BNMS T24V-1		1SNA **031 802** R1700	4
Plug OBIA 48 V yellow ☐	BNMS T48V-1		1SNA **031 803** R1000	4
Plug OBIA 115 V yellow ☐	BNMS T115V-1		1SNA **031 804** R1100	4
Plug OBIA 230 V yellow ☐	BNMS T230V-1		1SNA **031 805** R1200	4
Test device blue ☐	DCB (1)		1SNA **105 028** R2100	10
Test plug DIA. 2 mm	FC2		1SNA **007 865** R2600	10
Marking method	(16)	RC55	see markers	

(1) Only on top decks.

D 2,5/5-OBOC-0100 - 2.5 mm² blocks - 5.08 mm .200" spacing





D 2,5/5-OBOC-0100

Characteristics

Opto. characteristics		D 2,5/5-OBOC-0100 5 V DC / 24 V DC		D 2,5/5-OBOC-0100 48 V DC
INPUT				
Input voltage		4.5 V to 5.5 V DC	20.4 V to 28.8 V DC	40.8 V to 57.6 V DC
Input current		8.5 mA	4.8 mA	3.9 mA
Pull-in voltage at Is=100%		2.9 V DC	16 V DC	26 V DC
Switching time C / O		20 µs / 1.3 ms	20 µs / 1.3 ms	20 µs / 1.3 ms
Operating frequency		400 Hz	400 Hz	400 Hz
Permissible leakage current		1 mA	1 mA	1 mA
OUTPUT				
Output voltage		4.5 to 58 V DC		
Output current min.		1 mA		
Output current max.		100 mA		
Output leakage current at Umax.				
Residual voltage at I max and U rated	typical	1 V DC		
	max.	1.3 V DC		
Frequency on inductive load		See Note 1		
Isolation Input / Output		2500 V RMS		
TEMPERATURE				
Ambient temperature	storage	- 40°C to + 80°C		
	operating	See derating curves		

Other characteristics

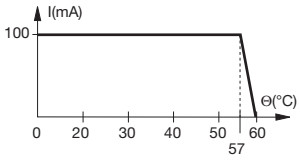
Body material	grey ☐	UL 94 V0
Wire size	Solid wire	0.2-4 mm² / 24-12 AWG
	Stranded wire	0.22-2.5 mm² / 24-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		10 mm .394"
Recommended screwdriver		3.5 mm .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Note 1 :

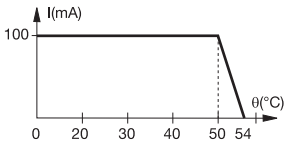
$F_{max} = (1\text{-}0{,}007 \times U_s) / (L \times I_s^2)$
or
$F_{max} = (1\text{-}0{,}007 \times U_s) / (P \times \frac{L}{R})$

U_s = Output voltage
I_s = Output current
L = Inductance of load
P = Power of load
R = Resistance of load

Derating curves



D 2,5/5-OBOC-0100 5 V DC / 24 V DC



D 2,5/5-OBOC-0100 48 V DC

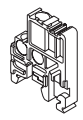
Order codes

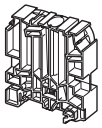
Description	Type	Order P/N	Packaging	Weight kg
Optocoupler module 5 V DC	D 2,5/5-OBOC-0100 5 V DC	1SNA **607 203** R1500	1	0.032
Optocoupler module 24 V DC	D 2,5/5-OBOC-0100 24 V DC	1SNA **607 204** R1600	1	0.032
Optocoupler module 48 V DC	D 2,5/5-OBOC-0100 48 V DC	1SNA **607 205** R1700	1	0.032

Accessories

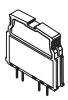
High end stop		BAMH	9,1 mm	1SNA **114 836** R0000	50
		BAMH V0	9,1 mm	1SNA **194 836** R0100	50
		BADH	12 mm	1SNA **116 900** R2700	50
Comb type jumper bar 2 to 22 poles		PCMS	V0	see accessories	
Plug for OBOC 5 V DC	red	BNMS P5V-3		1SNA **031 809** R2600	4
Plug for OBOC 24 V DC	red	BNMS P24V-3		1SNA **031 810** R1200	4
Plug for OBOC 48 V DC	red	BNMS P48V-3		1SNA **031 811** R0700	4
Test device	blue	DCB (1)		1SNA **105 028** R2100	10
Test plug	DIA. 2 mm	FC2		1SNA **007 865** R2600	10
Marking method		(16)	RC55	see markers	

(1) Only on top decks.


BAMH


BADH

PCMS


BNMS P...

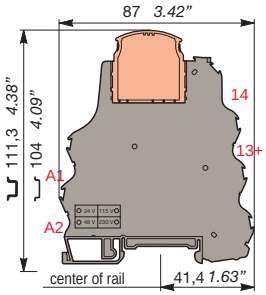
DCB

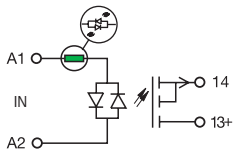
FC2

Optocouplers

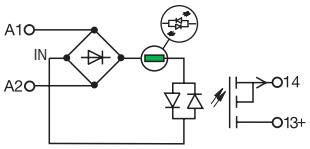
Electronic Interfaces

R500 pluggable optocoupler modules ⌴ DIN 3

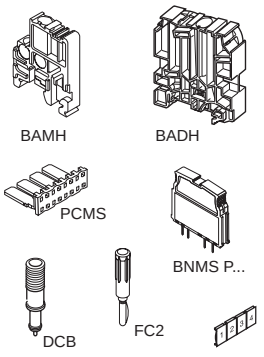




D 2,5/5-OBOC-1000 5/24 VDC



D 2,5/5-OBOC-1000 VAC/DC 24/48 VAC 110/230



D 2,5/5-OBOC-1000 - 2.5 mm² blocks - 5.08 mm .200" spacing

Characteristics

Opto. characteristics		D 2,5/5-OBOC-1000 110/230VAC		D 2,5/5-OBOC-1000 24/48 VAC/DC				D 2,5/5-OBOC-1000 5/24 VDC	
INPUT		5 VDC	24 VDC	24 VAC	24 VDC	48 VAC	48 VDC	110 VAC	230 VAC
Input voltage		4.5 to 5.5 VDC	20.4 to 28.8 VDC	24 ±10%	20.4 to 28.8 VDC	48 ±10%	40.8 to 57.6 VDC	110 ±10%	230 ±10%
Input current		12.3 mA	6.7 mA	10.5 mA	8 mA	6.8 mA	5.8 mA	8.5 mA	7.5 mA
Pull-in voltage at Is=100%		3.5 V DC				10 V DC			
Switching time C / O		20/250 µs	50/350 µs	15/13 ms	5/13 ms	15/15 ms	6/25 ms	15/15 ms	15/15 ms
Operating frequency		2000 Hz	1500 Hz	20 Hz	20 Hz	20 Hz	20 Hz	20 Hz	20 Hz
Permissible leakage current									
OUTPUT									
Output voltage		4.5 to 58 VDC		4.5 to 58 VDC					
Output current min.		1 mA		1 mA					
Output current max.		1 A		1 A					
Output leakage current at Umax.									
Residual voltage at I max and U rated	typical	0.1 V		0.1 V					
	max.	0.5 V		0.5 V					
Frequency on inductive load		See Note 1							
Isolation Input / Output		2500 V RMS							
TEMPERATURE									
Ambient temperature	storage	-40°C to +80°C							
	operating	See derating curve							

Other characteristics

Body material	grey ☐	UL 94 V0
Wire size	Solid wire	0.2-4 mm² / 24-12 AWG
	Stranded wire	0.22-2.5 mm² / 24-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		10 mm .394"
Recommended screwdriver		3.5 mm .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

: Note 1

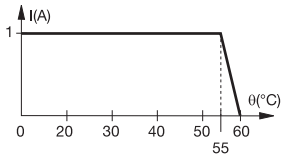
$$Fmax = (1\text{-}0{,}007 \times Us) / (L \times Is^2)$$

or

$$Fmax = (1\text{-}0{,}007 \times Us) / (P \times \frac{L}{R})$$

Us = Output voltage
Is = Output current
L = Inductance of load
P = Power of load
R = Resistance of load

Derating curve



Order codes

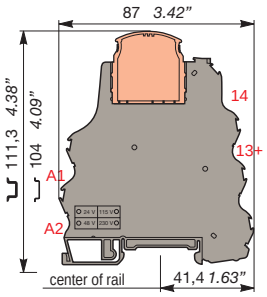
Description	Type	Order P/N	Packaging	Weight kg
Optocoupler module 5 V DC	D 2,5/5-OBOC-1000 5 V DC	1SNA **607 206** R1000	1	0.032
Optocoupler module 24 V DC	D 2,5/5-OBOC-1000 24 V DC	1SNA **607 207** R1100	1	0.032
Optocoupler module 24 V AC/DC	D 2,5/5-OBOC-1000 24 V AC/DC	1SNA **607 250** R2700	1	0.04
Optocoupler module 48 V AC/DC	D 2,5/5-OBOC-1000 48 V AC/DC	1SNA **607 251** R1400	1	0.04
Optocoupler module 110 V AC	D 2,5/5-OBOC-1000 110 V AC	1SNA **607 270** R2300	1	0.04
Optocoupler module 230 V AC	D 2,5/5-OBOC-1000 230 V AC	1SNA **607 271** R1000	1	0.04

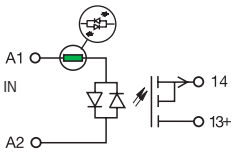
Accessories

High end stop	BAMH 9,1 mm	1SNA **114 836** R0000	50	
	BAMH V0 9,1 mm	1SNA **194 836** R0100	50	
	BADH 12 mm	1SNA **116 900** R2700	50	
Comb type jumper bar 2 to 22 poles	PCMS V0	see accessories		
Plug (2) red	BNMS P5V-2 5 V/1 A	1SNA **031 818** R1600	4	
Plug (3) red	BNMS P24V-2 24 V/1 A	1SNA **031 819** R1700	4	
Test device blue	DCB (1)	1SNA **105 028** R2100	10	
Test plug DIA. 2 mm	FC2	1SNA **007 865** R2600	10	
Marking method	(16) RC55	see markers		

(1) Only on top decks.
(2) For D 2,5/5-OBOC-2000 5 V DC only.
(3) For all D 2,5/5-OBOC-2000 except 5 V DC model.

D 2,5/5-OBOC-2000 - 2.5 mm² blocks - 5.08 mm .200" spacing





D 2,5/5-OBOC-2000

Characteristics

Opto. characteristics	D 2,5/5-OBOC-2000 110/230VAC		D 2,5/5-OBOC-2000 24/48 VAC/DC				D 2,5/5-OBOC-2000 5/24 VDC	
INPUT	VAC 230	VAC 110	VDC 48	VAC 48	VDC 24	VAC 24	VDC 24	VDC 5
Input voltage	±15% 230 40.8	±10% 110		±10% 48	to 28.8 VDC 20.4	±10% 24	to 28.8 VDC 20.4	to 5.5 VDC 4.5
Input current	mA 7.5	mA 8.5	mA 5.8	mA 6.8	mA 8	mA 10.5	mA 6.7	mA 12.3
Pull-in voltage at Is=100%	V DC 10							V DC 3.5
Switching time C / O	ms 15/15	ms 15/15	ms 6/25	ms 15/15	ms 5/13	ms 15/13	µs 50/350	µs 20/250
Operating frequency	Hz 20	Hz 20	Hz 20	Hz 20	Hz 20	Hz 20	Hz 1500	Hz 2000
Permissible leakage current								
OUTPUT								
Output voltage	to 30 VDC 4.5						to 30 VDC 4.5	
Output current min.	mA 1						mA 1	
Output current max.	A2						A2	
Output leakage current at Umax.								
Residual voltage at I max and U rated typical	V 0.1						V 0.1	
Residual voltage at I max and U rated max.	V 0.5						V 0.5	
Frequency on inductive load	See Note 1							
Isolation Input / Output	V RMS 2500							
TEMPERATURE								
Ambient temperature storage	40°C to +80°C-							
Ambient temperature operating	See derating curve							

Other characteristics

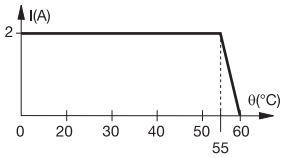
Body material grey □	UL 94 V0
Wire Solid wire	12 AWG-mm² / 24 4-0.2
size Stranded wire	12 AWG-mm² / 24 2.5-0.22
Rated wire size	mm² / 12 AWG 2.5
Wire stripping length	"mm .394 10
Recommended screwdriver	"mm .137 3.5
Protection	IP 20 NEMA 1
Recommended torque	5.3 lb.in-Nm 3.5 0.6-0.4
Approvals	

: Note 1

$$Fmax = (1-0{,}012 \times Us) / (L \times Is^2)$$
or
$$Fmax = (1-0{,}012 \times Us) / (P \times \frac{L}{R})$$

Us = Output voltage
Is = Output current
L = Inductance of load
P = Power of load
R = Resistance of load

Derating curve

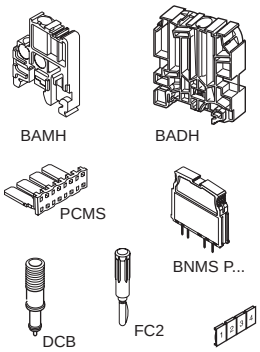


Order codes

Description	Type	Order P/N	Packaging	Weight kg
Optocoupler module 5 V DC	D 2,5/5-OBOC-2000 5 V DC	1SNA **607 208** R2200	1	0.032
Optocoupler module 24 V DC	D 2,5/5-OBOC-2000 24 V DC	1SNA **607 209** R2300	1	0.032
Optocoupler module 24 V AC/DC	D 2,5/5-OBOC-2000 24 V AC/DC	1SNA **607 255** R1000	1	0.04
Optocoupler module 48 V AC/DC	D 2,5/5-OBOC-2000 48 V AC/DC	1SNA **607 256** R1100	1	0.04
Optocoupler module 110 V AC	D 2,5/5-OBOC-2000 110 V AC	1SNA **607 272** R1100	1	0.04
Optocoupler module 230 V AC	D 2,5/5-OBOC-2000 230 V AC	1SNA **607 273** R1200	1	0.04

Accessories

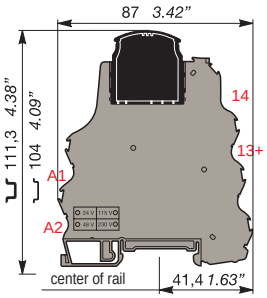
High end stop		BAMH 9,1 mm	1SNA **114 836** R0000	50
		BAMH V0 9,1 mm	1SNA **194 836** R0100	50
		BADH 12 mm	1SNA **116 900** R2700	50
Comb type jumper bar 2 to 22 poles		PCMS V0	see accessories	
Plug (2)	red	BNMS P5V-1 5 V/2 A	1SNA **031 814** R0200	4
Plug (3)	red	BNMS P24V-1 24 V/2 A	1SNA **031 815** R0300	4
Test device	blue	DCB (1)	1SNA **105 028** R2100	10
Test plug	DIA. 2 mm	FC2	1SNA **007 865** R2600	10
Marking method		(16) RC55	see markers	



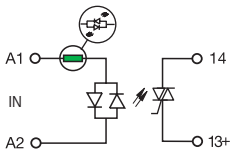
(1) Only on top decks.
(2) For D 2,5/5-OBOC-2000 5 V DC only.
(3) For all D 2,5/5-OBOC-2000 except 5 V DC model.

Electronic Interfaces

R500 pluggable optocoupler modules ⌴ DIN 3



D 2,5/5-OBOA-1000



D 2,5/5-OBOA-1000 - 2.5 mm² blocks - 5.08 mm .200" spacing

Characteristics

Opto. characteristics	D 2,5/5-... 24 VDC	D 2,5/5-OBOA-1000 24 VAC/DC-48 VAC/DC				D 2,5/5-OBOA-1000 110 VAC-230 VAC	
INPUT	24 VDC	24 VAC	24 VDC	48 VAC	48 VDC	110 VAC	230 VAC
Input voltage	20.4 to 28.8 VDC	24 ±10%	20.6 to 28.8 VDC	48 ±10%	40.8 to 57.6 VDC	110 ±10%	230 ±10%
Input current	4 mA	10 mA	7 mA	6 mA	5 mA	8 mA	7.5 mA
Pull-in voltage at Is=100%							
Switching time C / O	10/20 ms	20/20 ms	10/20 ms	20/20 ms	10/20 ms	20/20 ms	20/20 ms
Operating frequency	15 Hz	15 Hz	15 Hz	15 Hz	15 Hz	15 Hz	15 Hz
Permissible leakage current							

OUTPUT		
Output voltage		24 to 253 VAC
Output current min.		25 mA
Output current max.		1 A
Output leakage current at Umax.		0.5 mA max.
Residual voltage at I max and U rated	typical	1 V
	max.	1.6 V
Frequency on inductive load		See Note 1
Isolation Input / Output		2500 V RMS
TEMPERATURE		
Ambient temperature	storage	-40 to +80°C
	operating	See derating curve

Other characteristics

Body material	grey □	UL 94 V0
Wire	Solid wire	0.2-4 mm² / 24-12 AWG
size	Stranded wire	0.22-2.5 mm² / 24-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		10 mm .394"
Recommended screwdriver		3.5 mm .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Note 1 :

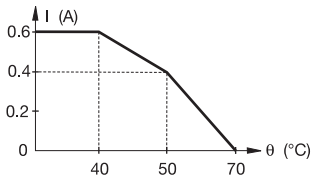
$$Fmax = (1\text{-}0{,}012 \times Us) / (L \times Is^2)$$

or

$$Fmax = (1\text{-}0{,}012 \times Us) / (P \times \frac{L}{R})$$

Us = Output voltage
Is = Output current
L = Inductance of load
P = Power of load
R = Resistance of load

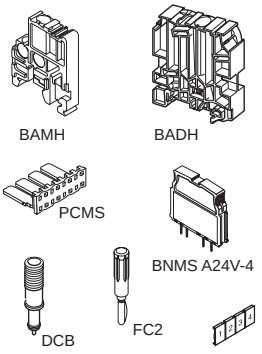
Derating curve



Order codes

Description	Type	Order P/N	Packaging	Weight kg
Optocoupler module 24 V DC	D 2,5/5-OBOA-1000 24 V DC	1SNA **607 238** R**1700**	1	0.032
Optocoupler module 24 V AC/DC	D 2,5/5-OBOA-1000 24 V AC/DC	1SNA **607 240** R**2500**	1	0.04
Optocoupler module 48 V AC/DC	D 2,5/5-OBOA-1000 48 V AC/DC	1SNA **607 241** R**1200**	1	0.04
Optocoupler module 110 V AC	D 2,5/5-OBOA-1000 110 V AC	1SNA **607 268** R**2500**	1	0.04
Optocoupler module 230 V AC	D 2,5/5-OBOA-1000 230 V AC	1SNA **607 269** R**2600**	1	0.04

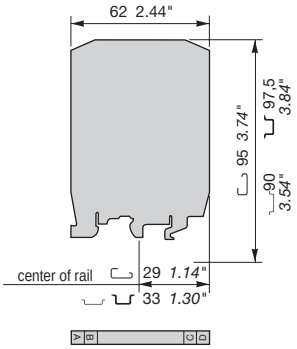
Accessories

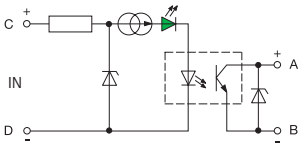


High end stop		BAMH 9,1 mm	1SNA **114 836** R**0000**	50
		BAMH V0 9,1 mm	1SNA **194 836** R**0100**	50
		BADH 12 mm	1SNA **116 900** R**2700**	50
Comb type jumper bar 2 to 22 poles		PCMS V0	see accessories	
Plug	black ■	BNMS A24V-4 250 V/1 A	1SNA **031 839** R**1300**	4
Test device	blue □	DCB (1)	1SNA **105 028** R**2100**	10
Test plug	DIA. 2 mm	FC2	1SNA **007 865** R**2600**	10
Marking method		(16) RC55	see markers	

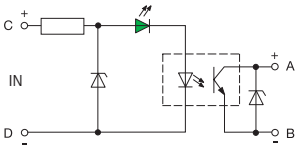
(1) Only on top decks.

OBC 0100 - 2.5 mm² blocks - 9 mm .354" spacing





OBC 0100 - 24 V DC



OBC 0100 - 48 V DC

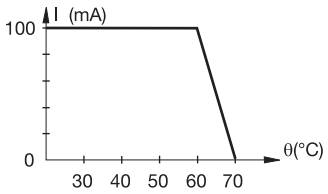
Characteristics

Opto. characteristics		OBC 0100 - 24 V DC	OBC 0100 - 48 V DC
INPUT			
Input voltage		10.2 V to 28.8 V DC	40.8 V to 57.6 V DC
Input current		7 mA to 12 V / 10 mA to 24 V	5 mA
Pull-in voltage at Is=100%		10.2 V DC	40.8 V DC
Switching time C / O		20 µs / 50 µs	20 µs / 50 µs
Operating frequency		7000 Hz	7000 Hz
Permissible leakage current			
OUTPUT			
Output voltage		5 to 60 V DC	
Output current min.		1 mA	
Output current max.		100 mA	
Output leakage current at Umax.			
Residual voltage at I max and U rated	typical	1 V	
	max.	1.3 V	
Frequency on inductive load		3000 V RMS	
Isolation Input / Output			
TEMPERATURE		- 40°C to + 80°C See derating curve	
Ambient temperature	storage		
	operating		

Other characteristics

Body material	grey ☐	UL 94 V0
Wire size	Solid wire	0.5-4 mm² / 20-12 AWG
	Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curve



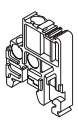
OBC 0100

Order codes

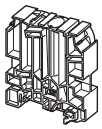
Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 24 V DC	OBC 0100	24 V DC	1SNA **608 017** R0600	1	0.04
Optocoupler module 48 V DC	OBC 0100	48 V DC	1SNA **608 021** R0200	1	0.04

Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836** R0000	50
	BAMH V0	9,1 mm	1SNA **194 836** R0100	50
	BADH	12 mm	1SNA **116 900** R2700	50
Lengthwise marker	RLV		1SNA **103 849** R0300	
Marking method	⑤	RC55	see markers	



BAMH

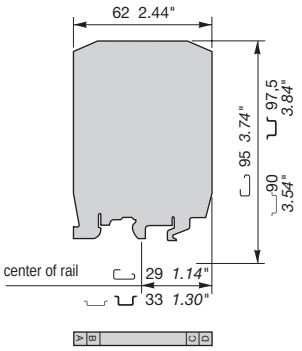


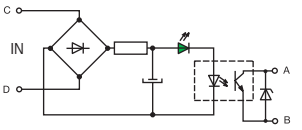
BADH

RLV

Optocouplers

OBC 0100 - 2.5 mm² blocks - 9 mm .354" spacing





230 V-OBC 0100 - 110

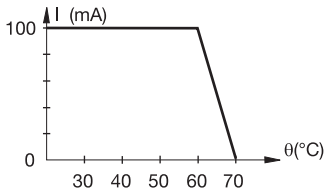
Characteristics

Opto. characteristics		OBC 0100 - 230 V AC	OBC 0100 - 110 V AC
INPUT			
Input voltage		93.5 V AC to 152.4 V AC	230 V AC +15%, -20%
Input current		8 mA	8 mA
Pull-in voltage at Is=100%		93,5 V AC	184 V AC
Switching time C / O		5 ms/5 ms	5 ms/5 ms
Operating frequency		50 Hz	50 Hz
Permissible leakage current			
OUTPUT			
Output voltage		4.5 to 60 V DC	
Output current min.		1 mA	
Output current max.		100 mA	
Output leakage current at Umax.			
Residual voltage at I max and U rated	typical	1 V	
	max.	1.3 V	
Frequency on inductive load			
Isolation Input / Output		3000 V RMS	
TEMPERATURE			
Ambient temperature	storage	- 40°C to + 80°C	
	operating	See derating curve	

Other characteristics

Body material	grey ☐	UL 94 V0
Wire	Solid wire	0.5-4 mm² / 20-12 AWG
size	Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curve



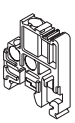
OBC 0100 - 110-230 V

Order codes

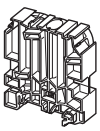
Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 110 V AC	OBC 0100	110 V AC	1SNA **608 024** R0500	1	0.04
Optocoupler module 230 V AC	OBC 0100	230 V AC	1SNA **608 027** R0000	1	0.04

Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836** R0000	50
	BAMH V0	9,1 mm	1SNA **194 836** R0100	50
	BADH	12 mm	1SNA **116 900** R2700	50
Lengthwise marker	RLV		1SNA **103 849** R0300	
Marking method	⑤	RC55	see markers	

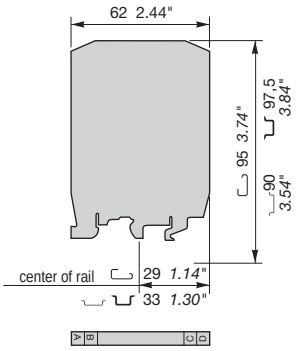


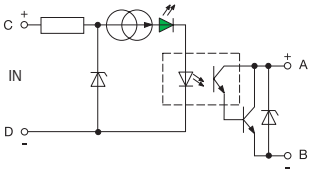
BAMH



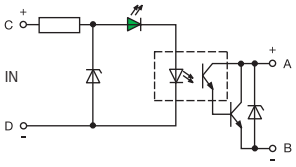
BADH

RLV

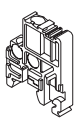




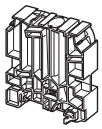
OBC 1000 - 24 V



48 V-OBC 1000 - 5



BAMH



BADH

RLV

OBC 0100 - 2.5 mm² blocks - 9 mm .354" spacing

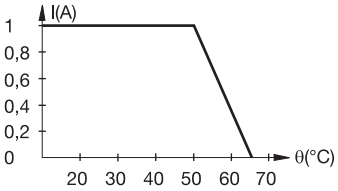
Characteristics

Opto. characteristics		OBC 1000 - 48 V DC	OBC 1000 - 24 V DC	OBC 1000 - 5 V DC
INPUT				
Input voltage		5 V DC +10%, -10%	10.2 V DC to 28.8 V DC	48 V DC +20%, -15%
Input current		6.5 mA	6.5 mA to 12 V / 9.5 mA to 24 V	4.5 mA
Pull-in voltage at Is=100%		4.5 V DC	10.2 V AC	40.8 V DC
Switching time C / O		20 µs / 50 µs	20 µs / 50 µs	20 µs / 50 µs
Operating frequency		7000 Hz	7000 Hz	7000 Hz
Permissible leakage current				
OUTPUT				
Output voltage		4.5 to 60 V DC		
Output current min.		1 mA		
Output current max.		1 A		
Output leakage current at Umax.				
Residual voltage at I max and U rated	typical	1 V		
	max.	1.3 V		
Frequency on inductive load				
Isolation Input / Output		3000 V RMS		
TEMPERATURE				
Ambient temperature	storage	- 40°C to + 80°C		
	operating	See derating curve		

Other characteristics

Body material	grey □	UL 94 V0
Wire size	Solid wire	0.5-4 mm² / 20-12 AWG
	Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curve



OBC 1000

Order codes

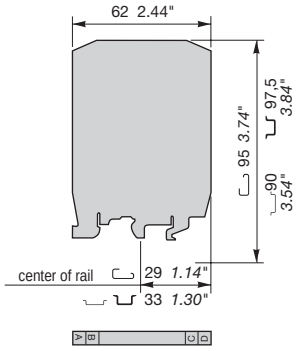
Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 5 V DC	OBC 1000	5 V DC	1SNA **608 014 R2200**	1	0.04
Optocoupler module 24 V DC	OBC 1000	24 V DC	1SNA **608 018 R1700**	1	0.04
Optocoupler module 48 V DC	OBC 1000	48 V DC	1SNA **608 022 R0300**	1	0.04

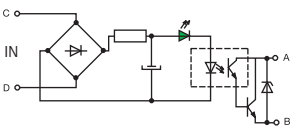
Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836 R0000**	50
	BAMH V0	9,1 mm	1SNA **194 836 R0100**	50
	BADH	12 mm	1SNA **116 900 R2700**	50
Lengthwise marker	RLV		1SNA **103 849 R0300**	
Marking method	⑤	RC55	see markers	

Electronic Interfaces

R900 optocoupler modules ⌴ DIN 3





230 V-OBC 1000 - 110

OBC 1000 - 2.5 mm² blocks - 9 mm .354" spacing

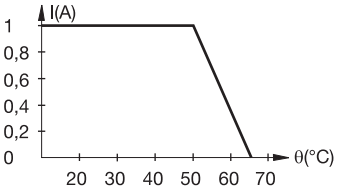
Characteristics

Opto. characteristics		OBC 1000 - 230 V AC	OBC 1000 - 110 V AC
INPUT			
Input voltage		93,5 V AC to 152,4 V AC	230 V AC + 15%, - 20%
Input current		8 mA	7 mA
Pull-in voltage at Is=100%		93.5 V AC	184 V DC
Switching time C / O		2 ms / 5 ms	1 ms / 5 ms
Operating frequency		800 Hz	800 Hz
Permissible leakage current			
OUTPUT			
Output voltage		4.5 to 60 V DC	
Output current min.		1 mA	
Output current max.		1 A	
Output leakage current at Umax.			
Residual voltage at I max and U rated	typical	1 V	
	max.	1.3 V	
Frequency on inductive load			
Isolation Input / Output		3000 V RMS	
TEMPERATURE			
Ambient temperature	storage	- 40°C to + 80°C	
	operating	See derating curve	

Other characteristics

Body material	grey ☐	UL 94 V0
Wire	Solid wire	0.5-4 mm² / 20-12 AWG
size	Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curve



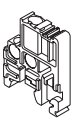
OBC 1000 - 110-230 V

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 110 V AC	OBC 1000	110 V AC	1SNA **608 025** R0600	1	0.04
Optocoupler module 230 V AC	OBC 1000	230 V AC	1SNA **608 028** R1100	1	0.04

Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836** R0000	50
	BAMH V0	9,1 mm	1SNA **194 836** R0100	50
	BADH	12 mm	1SNA **116 900** R2700	50
Lengthwise marker	RLV		1SNA **103 849** R0300	
Marking method	⑤	RC55	see markers	



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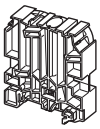
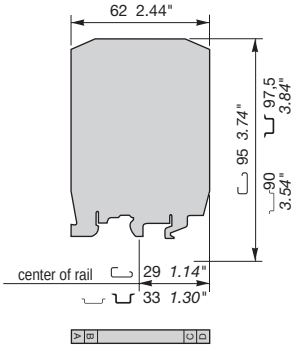
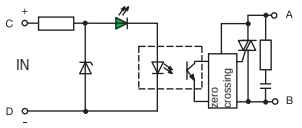


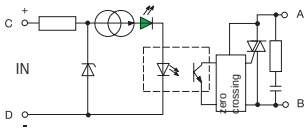
BADH

RLV

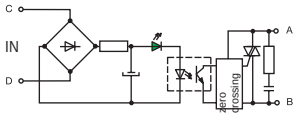




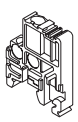
OBA 1000 - 5 - 48 V DC



OBA 1000 - 24 V DC



OBA 1000 - 110 V AC



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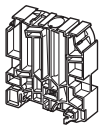


BADH

RLV

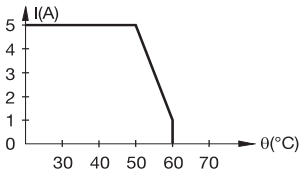
OBA 1000 - 2.5 mm² blocks - 9 mm .354" spacing

Characteristics

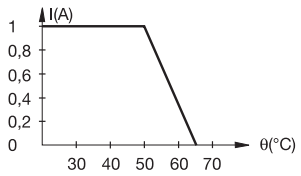
Opto. characteristics		OBA 1000 - 110 V AC	OBA 1000 - 48 V DC	OBA 1000 - 24 V DC	OBA 1000 - 5 V DC
INPUT					
Input voltage		5 V DC + 10%, - 10%	10.2 V DC to 28.8 V DC	48 V DC + 20%, - 15%	93.5 V AC to 152.4 V AC
Input current		10 mA	8 mA to 12 mA	7 mA	7 mA to 10 mA
Pull-in voltage at Is=100%		4.5 V DC	10.2 V DC	40.8 V DC	93.5 V AC
Switching time C / O		10 ms / 10 ms	10 ms / 10 ms	10 ms / 10 ms	10 ms / 10 ms
Operating frequency		25 Hz	25 Hz	25 Hz	25 Hz
Permissible leakage current					
OUTPUT					
Output voltage		24 to 253 V AC			
Output current min.		25 mA			
Output current max.		1 A			
Output leakage current at Umax.		0.5 mA max.			
Residual voltage at I max and U rated	typical	1 V			
	max.	1.6 V			
Frequency on inductive load					
Isolation Input / Output		3000 V RMS			
TEMPERATURE					
Ambient temperature	storage	- 40°C to + 80°C			
	operating	See derating curves			

Other characteristics		
Body material	grey ☐	UL 94 V0
Wire size	Solid wire	0.5-4 mm² / 20-12 AWG
	Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm 3.5-5.3 lb.in
Approvals		

Derating curves



OBA 1000 - 5 - 48 V DC



OBA 1000 - 24 V DC - 110 V AC

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 5 V DC	OBA 1000	5 V DC	1SNA **608 015 R0400**	1	0.05
Optocoupler module 24 V DC	OBA 1000	24 V DC	1SNA **608 019 R1000**	1	0.05
Optocoupler module 48 V DC	OBA 1000	48 V DC	1SNA **608 023 R0400**	1	0.05
Optocoupler module 110 V AC	OBA 1000	110 V AC	1SNA **608 026 R0700**	1	0.05

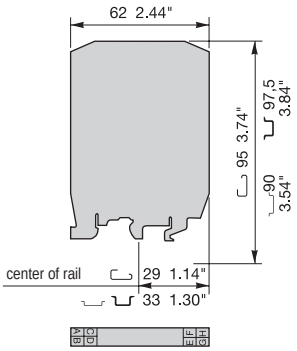
Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836 R0000**	50
	BAMH	9,1 mm	1SNA **194 836 R0100**	50
	BADH	12 mm	1SNA **116 900 R2700**	50
Lengthwise marker	RLV		1SNA **103 849 R0300**	
Marking method	⑤	RC55	see markers	

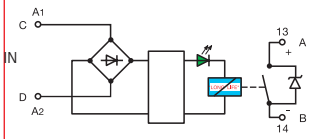
Electronic Interfaces

"Long Life" relay modules R900 ⊔⊔ DIN 1-3

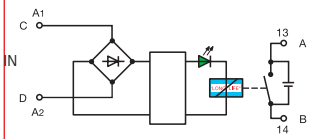
OR... 111 - relay blocks - 9 mm .354" spacing



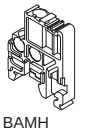
Relay blocks R900



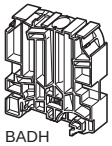
ORC 111



ORA 111



BAMH



BADH

PC9

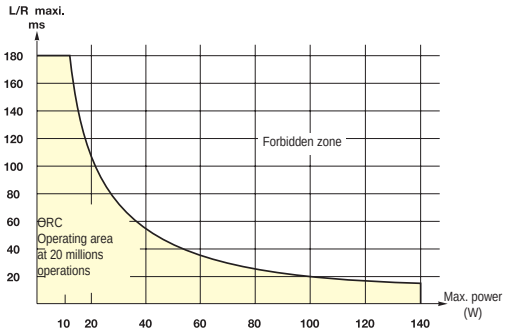
RLV

Characteristics

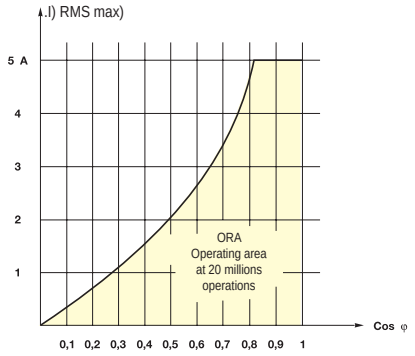
Relay characteristics	ORA 111 24 V DC	ORC 111 24 V DC
INPUT		
Rated voltage ±20% on DC	24 V DC	24 V DC
Power	0.65 W	0.6 W
Rated current	26 mA	20 mA
Drop-out voltage at 20°C	4 V	5 V
Drop-in voltage at 20°C		
Permissible leakage current		
Status device	green LED	
OUTPUT		
Type	1 NO	
Voltage switching range min./max.	10 V DC / 57,6 V DC	20 V AC / 135 V AC
Current switching range min./max.	100 mA / 5 A	
Load switching range		
AC1 min. / max.		2 VA / 675 VA
DC1 min. / max.	1 W / 280 W	
Number of on-load operations	20 x 10^6 (see curves)	
Number of off-load operations	20 x 10^6	
Operating speed F	80 µs	10 ms
O	20 ms	30 ms
Bounce		
Insulation input / output	3000 V RMS	
Resistance to shock input / output	5000 V RMS	
Inductive load max.	see curves	
Ambient temperature storage	-40°C to +80°C	
operating	see derating curves	

Other characteristics	
Body material grey ☐	UL 94 V0
Wire Solid wire	0.5-4 mm² / 20-12 AWG
size Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size	2.5 mm² / 12 AWG
Wire stripping length	7 mm / .276"
Recommended screwdriver	3.5 mm / .137"
Protection	IP 20 / NEMA 1
Recommended torque	0.4-0.6 Nm / 3.5-5.3 lb.in
Approvals	

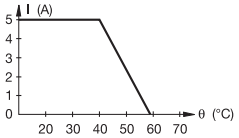
ORC type - Maximum switching power at 24V DC as per L/R



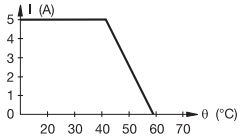
ORA type - Maximum switching current as per cos φ



Derating curves



ORC 111



ORA 111

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Long Life relay module 24 V DC	ORC 111	24 V DC	1SNA **608 068 R2100**	1	0.03
Long Life relay module 24 V DC	ORA 111	24 V DC	1SNA **608 069 R2200**	1	0.04

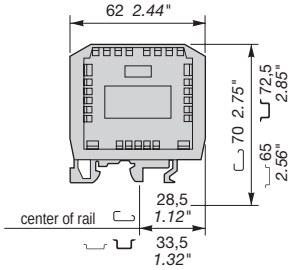
Accessories

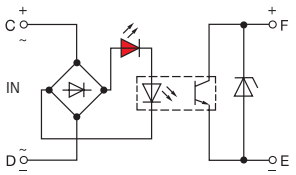
High end section	BADH	1SNA **116 900 R2700**	50
	BAMH	1SNA **114 836 R0000**	50
	BAMH V0	1SNA **194 836 R0100**	50
Comb-type jumper bar	PC9	1SNA **210 160 R1200**	10
Lengthwise marker	RLV	1SNA **103 849 R0300**	
Marking method	RC55	see markers	

Electronic Interfaces

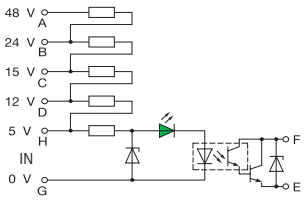
R1800 optocoupler modules ⊔ DIN 3

EBO... - 2.5 mm² blocks - 9 mm .354" spacing

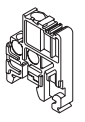




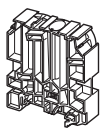
EBO1



EBO3 DC



BAMH



BADH

RLV

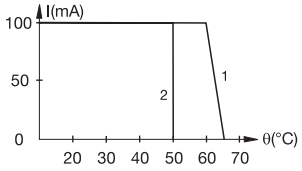
Characteristics

Opto. characteristics			EBO3 DC		220 V-EBO1 - 127			EBO1 - 24 V	
INPUT									
Input voltage	24 V AC	24 V DC	127 V AC/DC	220 V AC/DC	5 V DC	12 V DC	15 V DC	24 V DC	48 V DC
Input current	10 mA	8 mA	6 mA	5 mA			11 mA		
Pull-in voltage at Is=100%	12 V AC	16 V DC	88 V AC	128 V AC	4 V	9.6 V	12 V	19.2 V	38.4 V
Switching time C / O	10 ms / 7 ms				20 µs / 80 µs				
Operating frequency	30 Hz				500 Hz				
Permissible leakage current									
OUTPUT									
Output voltage	4.5 to 58 V DC				4.5 to 53 V DC				
Output current min.	1 mA				0.5 mA				
Output current max.	100 mA				50 mA				
Output leakage current at Umax.									
Residual voltage at I max and U rated typical	1 V				1 V				
max.	1.3 V				1.3 V				
Frequency on inductive load									
Isolation Input / Output	2500 V RMS				2500 V RMS				
TEMPERATURE									
Ambient temperature storage	- 40°C to + 80°C								
operating	See derating curves								

Other characteristics

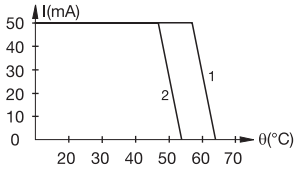
Body material	grey ☐	UL 94 V0
Wire	Solid wire	0.5-4 mm² / 20-12 AWG
size	Stranded wire	0.5-2.5 mm² / 20-12 AWG
Rated wire size		2.5 mm² / 12 AWG
Wire stripping length		7 mm .276"
Recommended screwdriver		3.5 .137"
Protection		IP 20 NEMA 1
Recommended torque		0.4-0.6 Nm
Approvals		

Derating curves



EBO1

1 : 24 V AC/DC model
2 : 127-230 V AC/DC model



EBO3 DC

1 : 5 to 24 V DC model
2 : 48 V DC model

Order codes

Description	Type		Order P/N	Packaging	Weight kg
Optocoupler module 24 V AC/DC	EBO1	24 V AC/DC	1SNA **610 022** R2000	1	0.03
Optocoupler module 127 V AC/DC	EBO1	127 V AC/DC	1SNA **610 108** R1400	1	0.03
Optocoupler module 220 V AC/DC	EBO1	220 V AC/DC	1SNA **610 023** R2100	1	0.03
Optocoupler module 5-12-15-24-48 V DC	EBO3 DC		1SNA **610 230** R1100	1	0.03

Accessories

High end stop	BAMH	9,1 mm	1SNA **114 836** R0000	50
	BAMH V0	9,1 mm	1SNA **194 836** R0100	50
	BADH	12 mm	1SNA **116 900** R2700	50
Lengthwise marker	RLV		1SNA **103 849** R0300	
Marking method	⑤	RC55	see markers	

Optocouplers